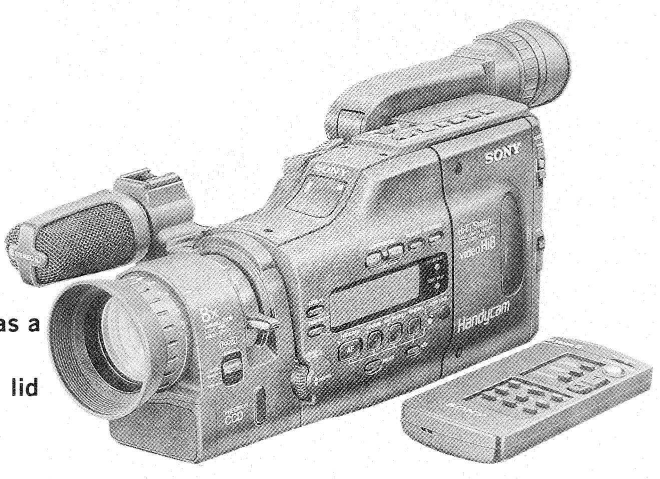
CCD-V600E
RMT-502

SERVICE MANUAL

AEP Model
UK Model

Remote commander RMT-502 is available as a unit, but as indivdual parts the battery case lid of commander is only available.



video Hi8 Handycam

U MECHANISM

SPECIFICATIONS

System

Video recording system	Rotary two heads Helical scanning FM system
Audio recording system	Rotary head, FM system (2 channels)
Video signal	PAL colour, CCIR standards
Usable cassette	8 mm video format cassettes
Tape speeds	SP mode: Approx. 2.0051 cm/sec. LP mode: Approx. 1.0058 cm/sec.
Recording time	SP mode: 1.5 hours (E5/P5-90) LP mode: 3 hours (E5/P5-90)
Playback time	SP mode: 1.5 hours (E5/P5-90) LP mode: 3 hours (E5/P5-90)
Fastforward/rewind time	Approx. 7 min. (E5/P5-90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (Black and white)
Lens	Combined 8 × power zoom lens f = 8.5 to 68 mm, F1.4 with macro Filter diameter 46 mm
Auto focus system	Infrared autofocus
Colour temperature	Auto, one push white balance, ☼ 3,200 K ☀ 5,800 K
Minimum illumination	3 lux (F1.4)
Illumination range	3 lux to 100,000 lux (0.3 to 9,294 footcandles)
Recommended illumination	More than 100 lux (9.3 footcandles)
Shutter speed control	1/50 to 1/10000 (16 steps)
Exposure control	Auto/manual (21 steps and CLOSE)

Input and Output Connector

Video output	Phono jack, 1 Vp-p, 75 ohms unbalanced, sync negative
S video ouput	4-pin mini-DIN Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative Chrominance signal: 0.3 Vp-p 75 ohms, unbalanced
Audio output	Phono jacks (2: stereo L and R), −7.5 dBs at 47 kilohms input impedance Impedance less than 1 kilohm
RFU DC OUT	Special mini jack, 5 V DC
Headphones jack	Stereo mini jack, 8-ohm impedance
REMOTE jack	Stereo mini-mini jack
Microphone jack	External stereo microphone jack: Stereo mini jack, −66 dBs low impedance with 2.5 to 3 V DC, output impedance 6.8 kilohms
Microphone power output jack	Special mini jack, 5 V DC

— continued on next page —

For MECHANICAL ADJUSTMENTS, refer to the "8mm Video MECHANICAL ADJUSTMENT MANUAL III (U MECHANISM)" (9-972-732-11)

MICROFILM

Hi8 VIDEO CAMERA RECORDER

SONY®

General

Power requirements	On battery mounting surface 6.0 V (battery pack), 7.5 V (AC power adaptor), 9.0 V (alkaline batteries)
Power consumption	6.9 W (camera recording, including the viewfinder)
Installation	Vertically, horizontally
Operating temperature	0° C to 40° C
Storage temperature	−20° C to 60° C
Dimensions	Approx. 105 × 142 × 350 mm (w/h/d)
Weight	Approx. 1.2 kg excluding the battery and the cassette
Microphone	Electret condensor microphone Uni-directional, stereo type
Accessories supplied	See page 4.

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

TABLE OF CONTENTS

Section *Title* *Page*

1. GENERAL

- Introduction 4
- Technical Information 4
- On the Menu System 6
- Selecting the Camera Recording Mode 7
- Identifying the Parts 8
- Connecting the Power Sources 12
- Setting the Date and Time 15
- Inserting Tapes 16
- Adjusting the Viewfinder Lens 16
- Recording a Picture with the Automatic Adjustments 17
- Using the Menu for Camera Recording 21
- Connections for Playback 22
- Playing Back a Tape 24
- Using the Tape Counter 26
- Using the Menu for Playback or Editing 27
- Manual Focusing 28
- Adjusting the White Balance 30
- Zooming 32
- Close-ups (Macro) 33
- Fade-in and Fade-out 33
- Recording a Title 34
- Recording a Picture Using Programmed AE and Manual Modes 39
- Portrait Mode 40
- Sports Mode 41
- Aperture Priority Mode 42
- Shutter Priority Mode 44
- Manual Mode 46
- Custom Preset Function 51
- Editing onto Another VTR 52
- Notes and Precautions 53
- Using Your Camcorder Abroad 55
- Indications in the Viewfinder and Display Window 56

2. DISASSEMBLY

2-1. Removal of Cassette LID Assy 58
2-2. Removal of Cabinet (Upper, Lens) Assy 58
2-3. Removal of Cabinet (Grip) Assy 58
2-4. Removal of Camera Block 58
2-5. Removal of VTR Block 59
2-6. Removal of AU-99 Board 59
2-7. Opening of VA-64 Board 59
2-8. Opening of FU-97 Board 59
2-9. Removal of SS-134 Board 60
2-10. Removal of Cassette Compartment Assy 60
2-11. Removal of VC-86 Board 60
2-12. Removal of CD-53 Board 60
2-13. Internal Views 61

Section *Title* *Page*

3. DIAGRAMS

3-1. Circuit Boards Location 62
3-2. Overall Block Diagram 63
3-3. Camera (1) Block Diagram 68
3-4. Camera System Contral VC-86 Board IC501 73
3-5. Camera (2) Block Diagram 75
3-6. Digital Titler Block Diagram 80
3-7. Video (1) Block Diagram 83
3-8. Video (2) Block Diagram 87
3-9. System Control Block Diagram 91
3-10. Servo Block Diagram 95
3-11. Servo, System Control System Terminal Function SS-134 Board IC001 98
3-12. Mode Control System Terminal Function FD-44 Board IC201 101
3-13. Audio Block Diagram 103
3-14. Power Block Diagram 107
3-15. Viewfinder (A) Block Diagram 111
3-16. Viewfinder (B) Block Diagram 113

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. Frame Schematic Diagram 115
4-2. Printed Wiring Boards and Schematic Diagrams 118
- VC-86 and CD-53 Boards 120
- SS-134 Board (R/P AMP) 130
- VA-64 Board (Video (1)) 139
- VA-64 Board (Video (2)) 146
- SS-134 (Servo, System Control), CC-60, FP-89 and FP-90 Boards 153
- FD-44, FK-47, FA-2, LI-33 and FP-376 Boards 162
- AU-99, MC-63 and SW-168 Boards 172
- FU-97 Board 181
- VF-26 and VF-27 Boards 185

4-3. Semiconductors 187

5. EXPLODED VIEWS

5-1. Cabinet (Upper) Assembly 189
5-2. Cabinet (Right) Assembly 190
5-3. Cabinet (Grip) Assembly 191
5-4. EVF (M, C) Assembly 192
5-5. Main Boards Assemblies 193
5-6. Mechanical Chassis Assembly (1) 194
5-7. Mechanical Chassis Assembly (2) 195
5-8. Mechanical Chassis Assembly (3) 196
5-9. Camera Block Assembly 197
5-10. Zoom Lens Assembly 198

6. ELECTRICAL PARTS LIST 199
Hardware List 232

Introduction

Overview of the CCD-V600E

The CCD-V600E Video Hi8 handycam is a compact colour video camera/recorder (camcorder). You can use it to shoot the pictures you want and play them back on your television set. It is equipped with a stereo recording system which offers high quality sound to match the Hi8 picture. The full featured camera section offers various camera adjustments to create just the kind of programme you wish.

Who this Manual is for

This manual is designed for you. You can use this manual to find exactly the information you need, whether you are familiar with video equipment or not.

How this Manual is Organized

This manual consists of seven sections.
Section 1 explains the preliminary steps necessary to prepare for shooting and playback.
Section 2 explains the very basic techniques of shooting.
Section 3 explains how to playback the tape being shot in section 2.
Section 4 explains additional shooting techniques which will add flavor to your programmes.
Section 5 explains the unique shooting techniques including the programmed AE mode and the manual mode.
Section 6 explains the techniques on how-to-edit your video programmes.
Section 7 explains other useful information to enjoy the best of your camcorder.

If you have any problem during operation, see the "Trouble Checks" section.

If you are beginner, start with "Recording a picture with the automatic adjustments." If you are very familiar with camcorder operation, also refer to "Operating the Camera Section (2) and (3)" for advanced shooting techniques.

How this Manual Works

Refer to the information below to help you follow the instructions in this manual.

- Controls and settings on the camcorder are shown in capital letters:
  ex. Set the POWER switch to CAMERA.
- The letter in an illustration corresponds to the letter in the text:
  ex. (A-1) or **(B)**
- The step numbers in an illustration correspond to the step numbers in the text.
- Notes and cautions are enclosed with lines.
  ex.

Note on batteries
Battery will not last as long in cold places.

Supplied Accessories

The camcorder is packed together with the following units. Check to see that everything is contained in the package.

- Wireless Remote Commander (1)
- R6 (size AA) batteries for the Wireless Remote Commander (2)
- Battery pack NP-66H (1)
- AC power adaptor AC-V35/AC-V35A (1)
- Lithium battery CR2025 (1)
- RFU adaptor RFU-90E (1), or RFU-89EA (1) With the RFU-89EA, an aerial selector and a screwdriver are supplied.
- A/V connecting cable (3 phono to 3 phono) (1)
- Video cable with S video connectors (4-pin mini DIN to 4-pin mini DIN) (1)
- Cassette tape (1)
- Shoulder strap (1)
- Jack covers* (1 set)
- Lens cap* (1)

Items with an asterisk (*) is attached to the unit.

SECTION 1
GENERAL

This section is extracted from instraction of manual.
(AEP, UK model)

Technical Information

Hi8 (High Eight) Video System

The 8 mm video system employs a metal powder tape. This means the video camera recorder is capable of recording a large amount of information and enhances picture quality. Taking advantage of the 8 mm video system, the Hi8 video system has been developed. The main characteristics of the Hi8 video system are as follows:

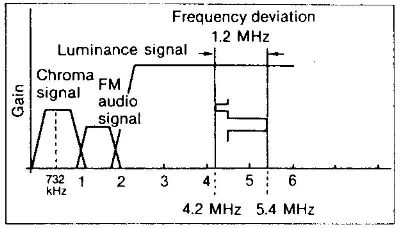
Super High Quality Picture

(A-1), (A-2)

The information capacity is a key element for picture improvement. It can be increased by shifting up the FM carrier frequency range. In the Hi8 video system, the FM carrier frequency range of the luminance signal is shifted up to 5.7–7.7 MHz. This is higher than the 4.2–5.4 MHz range of the standard 8 mm video system. Thanks to this, the horizontal resolution is improved to more than 400 lines.

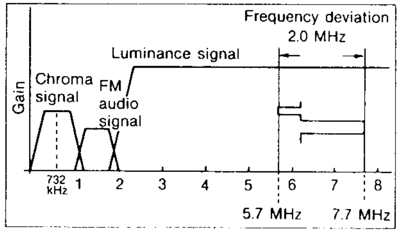
(A-1)

Frequency allocation of the standard 8 mm video system



(A-2)

Frequency allocation of the Hi8 video system



Use of High Grade Tape to Match the Hi8 Video System

Metal evaporated tape is ideal for video systems because it has large magnetic energy that allows for high-density recording. The Hi8 video camera recorder uses such high-grade tape for the Hi8 video system, covering a wide frequency range, to achieve a high-quality video signal for recording/playback.

S VIDEO (Separate Luminance/ Chroma Signal) Output Connector

Conventionally, video equipment exchanges the composite video signal containing the luminance (Y) signal and the chroma (C) signal mixed. The composite video signal is liable to produce interference resulting in picture quality loss. On the contrary, an S VIDEO connector transmits the video signal separated into the luminance signal and the chroma signal. Flickers and colour blur in the picture are minimized with the separated video signal, and sharpness is enhanced to such an extent that hair and fine stripes are clearly visible. The S VIDEO connector also assures an excellent editing quality with minimum picture quality loss.

Compatibility with Conventional Video Camera Recorders

A high-quality picture can be recorded and played back on a tape for the Hi8 video system.

Recording with this unit

Hi8 tape **Hi8**

MODE SET menu "**Hi8**" to "AUTO" → Tape is recorded in the Hi8 video system

MODE SET menu "**Hi8**" to "OFF" → Tape is recorded in the standard 8 mm video system

Standard 8 mm tape **8**

Regardless of the "**Hi8**" setting in the MODE SET menu → Tape is recorded in the standard 8 mm video system

Playback with this unit

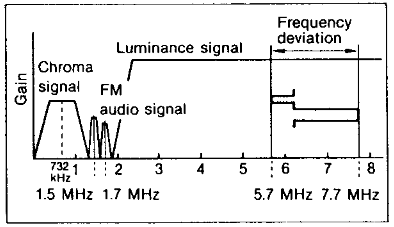
Tape recorded in the Hi8 video system
Tape recorded in the standard 8 mm video system
} → The recording mode is selected automatically

- A tape recorded in the Hi8 video system cannot be played back with an conventional 8 mm video camera recorder.
- A standard 8 mm tape **8** cannot be recorded in the Hi8 video system.
- A tape for the Hi8 video system cannot be recorded and played back in the Hi8 video system with a conventional video camera recorder.
- The recording tape speeds in the Hi8 video system are compatible with the conventional 8 mm format.
  Recording/playback time in the SP mode is 1.5 hours using a E5-90/P5-90 tape or the equivalent.

Cassette used	**With this unit**		
	Recording		**Playback**
	Hi8	**Normal**	
Standard 8 mm tape **8**	No	Yes	Yes
Hi8 tape **Hi8**	Yes	Yes	Yes

(A-3)

Frequency allocation of the Hi-Fi system

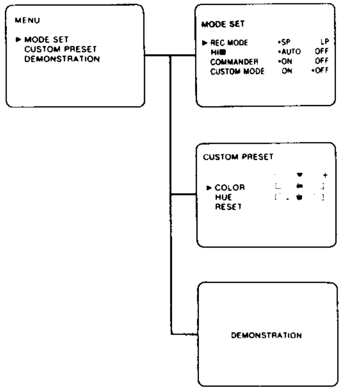


Hi-Fi Stereo System

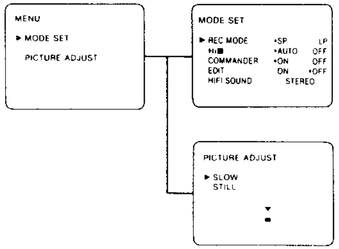
On the 8 mm video standard track the sound is recorded/played back in AFM Hi-Fi monaural. On this camcorder, an additional AFM Hi-Fi stereo sound can be recorded on the standard track.
The AFM Hi-Fi stereo sound is recorded as L+R on the 1.5 MHz carrier and L−R on the 1.7 MHz carrier in FM as illustrated. **(A-3)** This method was adopted to maintain compatibility with the conventional AFM Hi-Fi monaural sound.
When playing back the tape recorded in this Hi-Fi stereo system, a matrix circuit is used to produce the L and R stereo sounds separately. When a conventional AFM Hi-Fi monaural model is used to playback a tape recorded by this camcorder in AFM Hi-Fi stereo, the playback sound will be in a L+R monaural sound. This is because the monaural models will playback only the sound recorded in the 1.5 MHz carrier.
The AFM Hi-Fi stereo system of this camcorder enables you to enjoy a live stereo sound atmosphere.

Compatibility with the conventional 8 mm video format
When you playback a tape recorded in AFM Hi-Fi stereo on a conventional 8 mm video equipment, the sound will be in monaural.

(B-1)


MENU
▶ MODE SET
CUSTOM PRESET
DEMONSTRATION
MODE SET
▶ REC MODE •SP LP
Hi■ •AUTO OFF
COMMANDER •ON OFF
CUSTOM MODE ON •OFF
CUSTOM PRESET
▶ COLOR
HUE
RESET
+
DEMONSTRATION

(B-2)


MENU
▶ MODE SET
PICTURE ADJUST
MODE SET
▶ REC MODE •SP LP
Hi■ •AUTO OFF
COMMANDER •ON OFF
EDIT ON •OFF
HIFI SOUND STEREO
PICTURE ADJUST
▶ SLOW
STILL

On the Menu System

The menu system of this camcorder enables setting and adjustments to further enjoy the features and functions. The menu is displayed in the viewfinder or on the TV screen if connected to a TV. The menu consists of two main parts, one for camera recording and the other for playback and editing. Refer to the following section for a quick overview of the two menus.

Menu System for Camera Recording

(B-1)

MODE SET
Various mode settings for camera recording is made in this menu.

CUSTOM PRESET
The camcorder can be adjusted to perform camera recording in the desired picture.

DEMONSTRATION
The camcorder automatically shows the manual mode, four programmed AE modes, each title mode, menu displays in sequence.

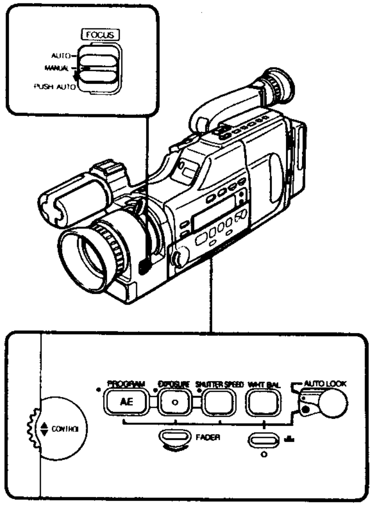
Menu System for Playback and Editing

(B-2)

MODE SET
Various mode settings for playback and editing are made in this menu.

PICTURE ADJUST
The playback picture can be adjusted to obtain maximum quality.

(C)



Selecting the Camera Recording Modes

(C)

Various camera recording modes are available in this camcorder. Automatic adjustment of aperture, gain, white balance, focus, plus the locked shutter speed offers worry-free camera recording for the beginner. Manual adjustment of each of these parameters offers effective camera recording to meet different object and shooting conditions.
Plus, the programmed AE mode offers additional shooting techniques to enrich the creation of your video program.

Full Automatic Adjustment Mode

When the FOCUS switch is set to AUTO, focus is automatically adjusted.
When the AUTO LOCK switch is set to AUTO LOCK, aperture, gain, and white balance are automatically adjusted and the shutter speed is locked to the normal speed (1/50).
The FOCUS switch setting has no relation with the AUTO LOCK switch setting.

Manual Adjustment Mode

FOCUS

- Set it to AUTO to activate the automatic focusing in manual adjusting mode.
- Set this switch to MANUAL to focus manually.
- Press it down during manual focusing mode, automatic focusing is activated for the extension that the switch is pressed down (PUSH AUTO).

By setting the AUTO LOCK switch down, each parameter can be adjusted manually.

EXPOSURE

- Each press of this button switches between automatic and manual adjustment.
- 21 exposure values (F16/0dB to F1.4/+18dB) plus aperture close can be selected using the CONTROL dial in the manual mode.

SHUTTER SPEED

- Each press of this button switches the shutter speed as follows:
  1/50 (No indication) → 1/120
  ↑ ↓
  └── 1/1000 ←──┘
- 16 shutter speeds (1/50 to 1/10000) can be selected using the CONTROL dial in the manual mode.

WHT BAL (white balance)

- Each press of this button switches the mode as follows:
  Automatic (no indication) → ⊡ (One-push adjustment)
  ↑ ↓
  ✧ (Indoors) ← ☼ (Outdoors)

⊡ (One-push white balance)

- When pressed during ⊡ mode, the white balance can be adjusted manually.

Programmed AE Modes

By setting the AUTO LOCK switch down, four programmed AE modes can be selected to match distinctive camera recording conditions.

Portrait mode
Use to focus on the subject and to have the background out of focus. The aperture and shutter speed is automatically adjusted to maintain the appropriate exposure according to the size and brightness of the subject.

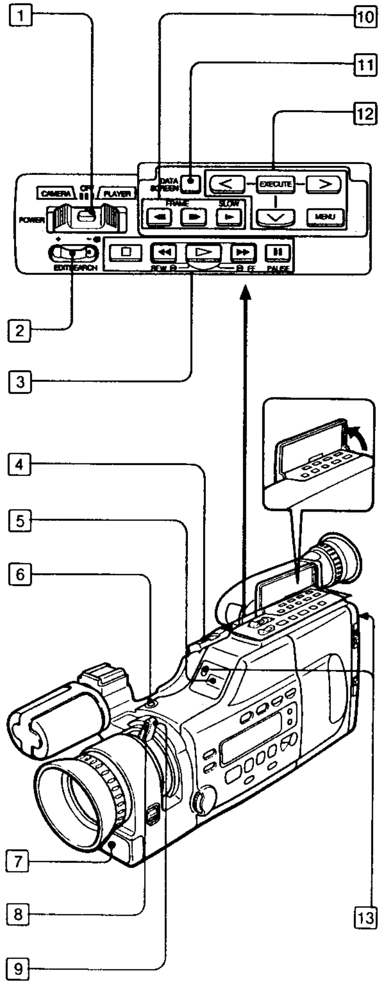
Sports mode
Use to shoot subjects moving at high speeds and then play it back clearly in slow or still. The aperture and shutter speed is automatically adjusted to maintain the appropriate exposure according to the speed of the subject.

Aperture priority mode
Select the desired aperture (F1.4 to F16) with the CONTROL dial and the shutter speed will be automatically adjusted to maintain the appropriate exposure.

Shutter priority mode
Select the desired shutter speed (1/50 to 1/10000) with the CONTROL dial and the aperture will be automatically adjusted to maintain the appropriate exposure.

Manual Mode
The shutter speed is locked to the normal speed (1/50) and the exposure is adjusted automatically.
When you press the EXPOSURE and SHUTTER SPEED buttons in this mode, the exposure and shutter speed can be selected by using the CONTROL dial in the manual mode.

Note
Focus and white balance can either be adjusted automatically or manually during the programmed AE mode. The adjusting method is same as those in the "Manual Adjustment Mode."



Identifying the Parts

(D-1)

For details of the use of each parts, refer to the pages indicated in ●.

1 POWER switch
CAMERA: for camera recording
PLAYER: for playing back or editing tapes
OFF: power off

2 EDITSEARCH (and recording review) buttons ●

3 Tape transport buttons ●, ●
□ (stop)
◀◀ REW (rewind)
▷ (playback)
▶▶ FF (fastforward)
❚❚ PAUSE

4 Power zoom button ●

5 Remote control sensor ●

6 REC (recording) START/STOP button for low position camera recording ●
Use this button instead of the START/STOP button for low-position recording.

7 AF (auto focus) sensor
Measures the distance from the camcorder to the object in the auto focusing funcion. Do not cover with your fingers, etc.

8 Macro set button (green) ●

9 Zoom lever ●

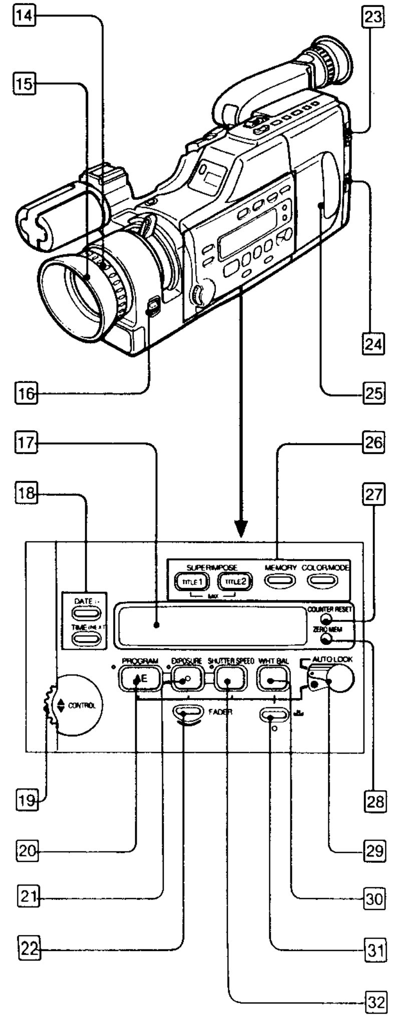
10 Tape transport buttons ●
❚▶ SLOW (slow speed playback)
< ◀❚❚/❚❚▶ > (direction switch/frame-by-frame playback)

11 DATA SCREEN button ●

12 Menu operation buttons ●, ●
MENU
EXECUTE
</>/ v

13 Camera recording/battery lamps (Back cover)
Light during camera recording. Blink when the battery is exhausted, or the tape reaches its end.

(D-2)


14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
SUPERIMPOSE
TITLE 1
TITLE 2
MEMORY
COLOR/MODE
DATE
TIME
COUNTER RESET
ZERO MEM
PROGRAM
AE
EXPOSURE
SHUTTER SPEED
WHT BAL
AUTO LOCK
CONTROL
FADER

(D-2)

14 **Focus ring**

15 **Lens hood** (72)

16 **FOCUS switch** (31), (55)

17 **Display window** (103)

18 **DATE (+)/TIME (NEXT) buttons** (27), (24)

19 **CONTROL dial** (16)
Move up or down to select the desired parameters during programmed AE mode and manual adjustment mode.

20 **PROGRAM AE (programmed auto exposure) button** [illegible]

21 **EXPOSURE button** (59)

22 **FADER button** (65)

23 **EJECT (cassette eject) button** (28)

24 **BATT (battery eject) knob** (21)

25 **Cassette holder**

26 **SUPERIMPOSE buttons** (65)
TITLE 1 button
TITLE 2 button
MEMORY button
COLOR/MODE button

27 **COUNTER RESET button** (36), (49)

28 **ZERO MEM (memory) button** (35), (49)

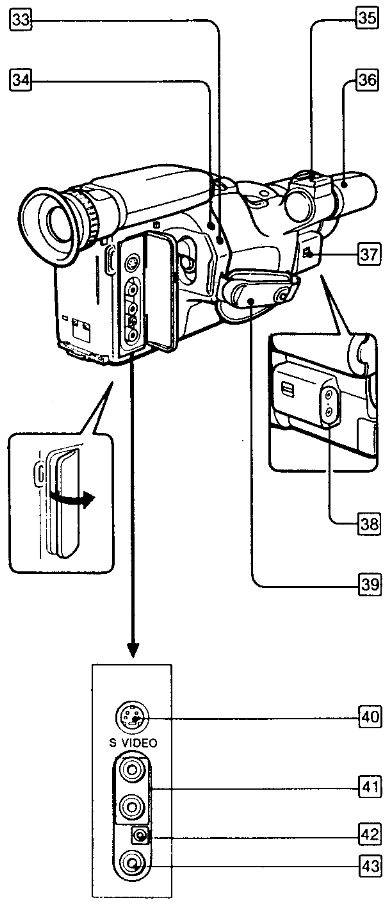
29 **AUTO LOCK switch** (58)
To adjust the aperture, gain, white balance automatically and the shutter speed locked to 1/50, set to AUTO LOCK.

30 **WHT BAL (white balance) button** (58)

31 **(one-push white balance) button** (59)

32 **SHUTTER SPEED button** (58)

(D-3)


33
34
35
36
37
38
39
40
41
42
43
S VIDEO

(D-3)

33 **∩ (headphones) jack (stereo mini jack)**

34 **REMOTE connector (stereo mini-minijack)**
Connect a wired remote control unit, a editing controller (not supplied), etc.

35 **Accessory shoe**
Attach a video light, external microphone, (not supplied) etc.

36 **Built-in one-point stereo microphone***

37 **BUILT-IN MIC (microphone)/WIND selector** (35)

38 **EXT MIC and DC OUT (microphone power output) jack**
Connect an external microphone (not supplied). The DC OUT jack supplies power to it. When connecting "plug-in-power" microphones, use the MIC jack only.

39 **Grip strap** [illegible]

40 **S VIDEO output connector (4-pin mini DIN connector)** (41), (99), (101)

41 **AUDIO L/R output jacks (phono jacks)** (41), (99), (101)

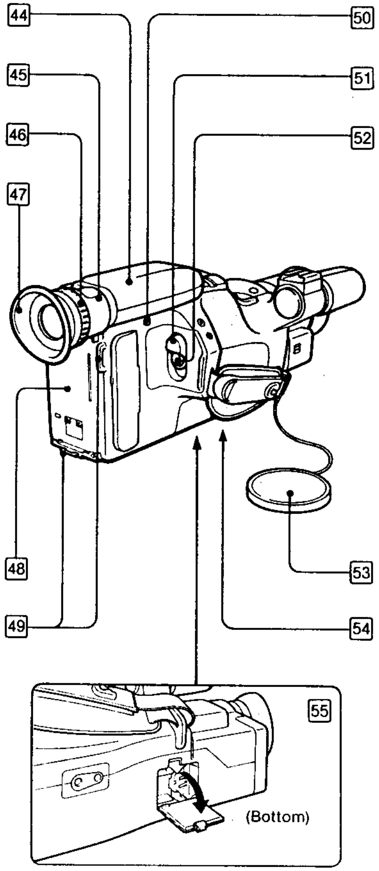
42 **RFU DC OUT (RFU adaptor DC output) jack (special minijack)** (43), (43)
Attach the supplied RFU adaptor here.

43 **VIDEO output jack (phono jack)** (41), (99), (101)

About the (LANC) mark
(LANC) stands for Local Application Control Bus System. The (LANC) connector is used for controlling the tape transport of video equipment and peripherals connected to it. This connector has the same function as the connectors indicated as CONTROL L or REMOTE.

***Note on the built-in microhone**
The microphone is fixed to the camcorder. Do not turn the microphone or hold the camcorder by the microphone. This may damage the camcorder.

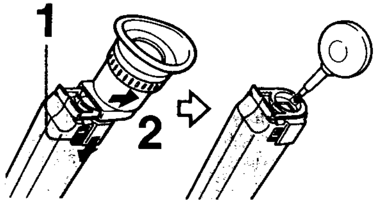
(D-4)



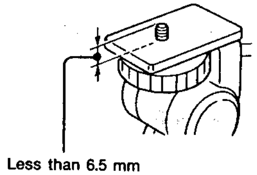
(D-4)

- 44 **Viewfinder** ●
  The picture being recorded or played back can be monitored in black and white in here. Caution indicators, tape operation modes, function modes, menu are also displayed.
- 45 **Sports finder**
  As the focal length is long, you can monitor the picture while being away from the eyecup.
- 46 **Viewfinder lens adjustment ring** ●
- 47 **Eyecup**
- 48 **Battery mounting surface** ●
- 49 **Hooks for shoulder strap**
- 50 **PUSH SLIDE button**
  Press this button and slide the viewfinder to the desired position.
- 51 **STANDBY switch**
  Slide up to set the camcorder to the standby mode.
- 52 **START/STOP button**
  Press to start and stop camera recording.
- 53 **Lens cap**
- 54 **Tripod receptacle (bottom)**
- 55 **Lithium battery compartment (bottom)** ●

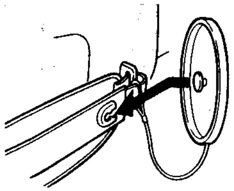
(D-5)



(D-6)



(D-7)

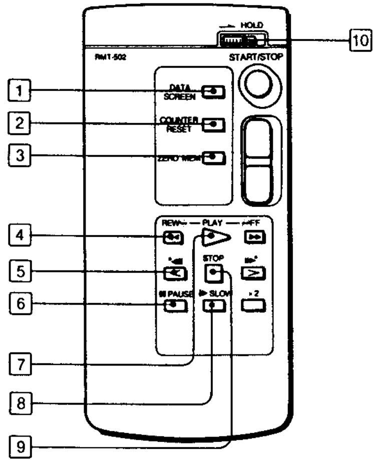


To remove the dust from inside the viewfinder (D-5)
Detach the sports finder as illustrated and clean the surface of the screen with a blower.

Note on attaching a tripod (D-6)
When attaching a tripod other than Sony's, make sure that the length of the camera mounting screw is less than 6.5 mm. Otherwise, the screw may damage the inner parts of the camcoder.

When the lens cap is removed (D-7)
Attach the lens cap to the grip strap.

(D-8)


HOLD
RMT-502
START/STOP
DATA SCREEN
COUNTER RESET
ZERO MEM
REW
PLAY
FF
STOP
PAUSE
SLOW
×2
1
2
3
4
5
6
7
8
9
10

Wireless Remote Commander

(D-8)

You can record or play back a tape from a distance. The buttons on the Commander with the same name or mark as those on the camcorder have the same function.

When you use the Commander
Be sure to select "COMMANDER ON" in the MODE SET menu (page 38 and 50) and then start operating the camcorder. Point the Commander to the remote sensor on the camcorder.

1 DATA SCREEN button ●

2 COUNTER RESET button ●, ●

3 ZERO MEM (memory) button ●, ●

4 ◀◀ REW ⊖ (rewind) button ●, ●

5 </◀❚❚ (reverse direction/reverse frame) button ●

6 ❚❚ PAUSE button ●, ●

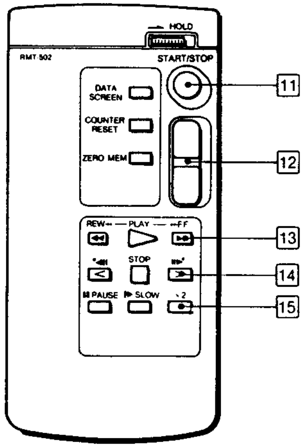
7 ▷ PLAY button ●, ●

8 SLOW ❚▶ button ●

9 □ STOP button ●

10 HOLD switch
Provided only on the Commander.
Slide in the direction of the arrow to prevent the buttons from being accidentally depressed.

(D-9)


HOLD
RMT 502
START/STOP
DATA SCREEN
COUNTER RESET
ZERO MEM
REW
PLAY
FF
STOP
PAUSE
SLOW
×2
11
12
13
14
15

(D-9)

11 START/STOP button
Press to start and stop camera recording.

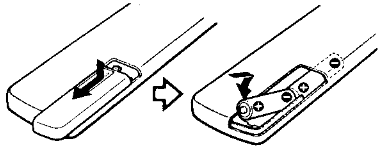
12 Power zoom button ●

13 ▶▶ ⊖ FF (fast forward) button ●, ●

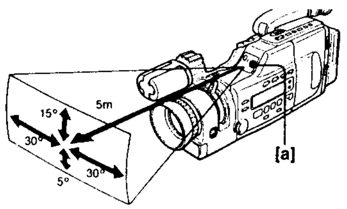
14 >/❚❚▶ (forward direction/forward frame) button ●

15 X 2 button ●
Provided only on the Commander.

(D-10)



(D-11)


15°
5m
30°
5°
30°
[a]

Inserting batteries
(D-10)
Insert two R6 (size AA) batteries with polarity positioned correctly.

Remotely controllable range
(D-11)
Point the Commander towards the remote sensor **[a]**.

Notes on batteries

- The batteries will last for about six month under normal operation. However, if the Commander will not be used for a long period, remove the batteries to avoid possible damage from battery leakage.
- Do not let direct sunlight or strong light source light the camcorder's remote control sensor. Remote control with the Commander may not be effective.
- The command mode of the Commander is VTR 2. Avoid using Sony VTRs with the same command mode at the same time.

Connecting the Power Sources

First Choose the Power Source

Place	Power source	Accessory to be used
Outdoors	Battery pack	Battery pack NP-66H (supplied), NP-77H NP-77, or NP-55
	Alkaline batteries	Battery case EBP-77
Indoors	House current	AC power adaptor AC-V35/ AC-V35A (supplied), AC-V30, or AC-V55
In the car	12 V or 24 V car battery	DC pack DCP-77, or AC power adaptor AC-V55 and car battery cord DCC-16AE

Note on power sources
Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If disconnected, supply the power again immediately.

Using the Battery Pack

Step 1
Charge the battery pack. **(E-1)**

1 **Align the groove on the battery pack with those on the AC power adaptor.**

2 **Slide in the battery pack to the right as illustrated.**

3 **Connect the AC power adaptor to a wall outlet.**

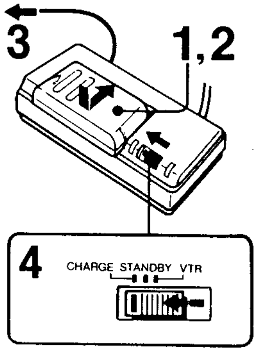
4 **Set the CHARGE/VTR selector to CHARGE.** Charging begins.

	NP-66H (supplied)	NP-55	NP-77	NP-77H
Required charging time	100	60	120	140

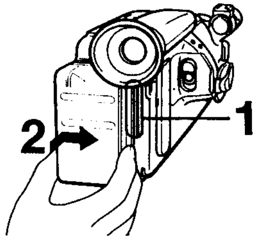
(approx. minutes using AC-V35/AC-V35A)

Refer to the operating instructions of the AC power adaptor for details.

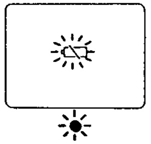
(E-1)



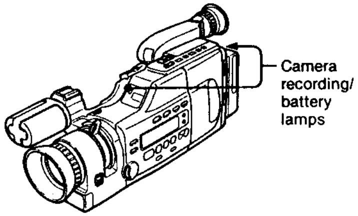
(E-2)



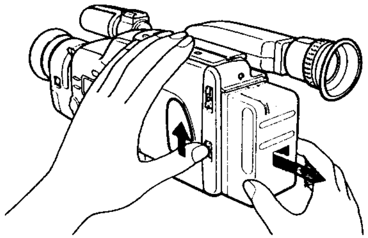
(E-3)



(E-4)



(E-5)



Step 2
Mount the battery pack on the camcorder. **(E-2)**

1 **Align the right side of the battery pack with the line on the camcorder.**

2 **Slide in the battery pack to the right as illustrated.**

Note
Make sure that the battery fits completely on the mounting surface of the camcorder.
Imperfect mounting may damage the projections of the camcorder.

Battery life
A fully charged battery pack lasts for:

	NP-66H (supplied)	NP-55	NP-77	NP-77H
Battery life	65	35	70	90

(approx. minutes, continuous recording when used indoors)

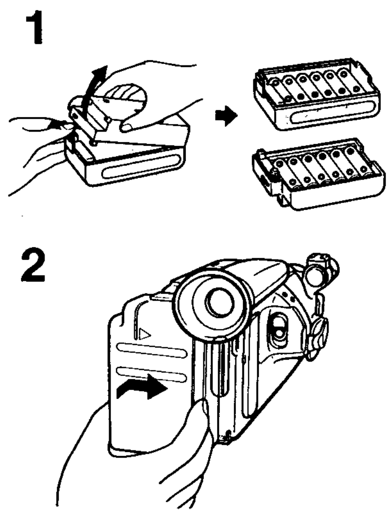
When the battery becomes weak, the 🔋 indication and the red lamp in the viewfinder **(E-3)** and the camera recording/battery lamps **(E-4)** blink. Replace the battery pack with a fully charged one.

To remove the battery pack
(E-5)
Hold the BATT knob up, and slide the battery pack to the left.

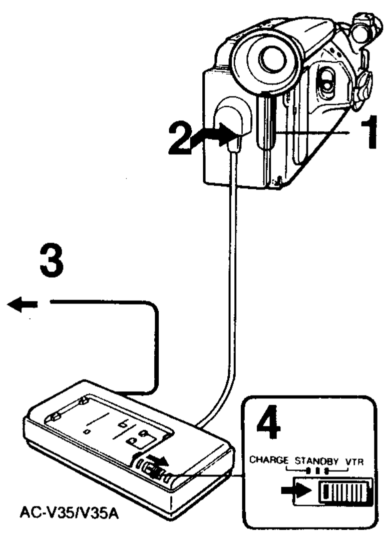
Other options
- AC-V55 AC power adaptor:
  You can charge two battery packs.
- DC-V30 car battery pack:
  You can charge a battery pack by connecting the car battery charger to the cigarette lighter socket.

If you have an NP-4000
You can use it for long outdoor recording.

(E-6)



(E-7)



Using Alkaline Batteries

(E-6)

The EBP-77 battery case (not supplied) is required.

1 **Insert 12 R6 (size AA) alkaline batteries into the battery case.**
You cannot use the manganese batteries.

2 **Attach the battery case in the same way as the battery pack.**

Battery life
Approximately 95 minutes under continuous recording when used indoors.

To remove the battery case
Proceed in the same way as the battery pack.

Notes on battery life while using the battery case
- Batteries does not last as long in cold places.
- No indication appears in the viewfinder to warn of a weak battery.

Using the House Current

(E-7)

The supplied AC-V35/AC-V35A AC power adaptor is required.

1 **Align the right side of the connecting plate with the line on the camcorder.**

2 **Slide in the connecting plate to the right.**

3 **Connect the AC power adaptor to a wall outlet.**

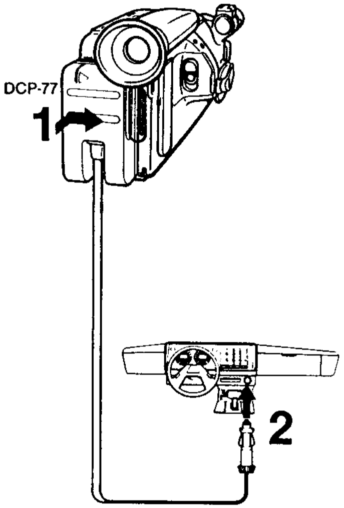
4 **Set the CHARGE/VTR selector on the AC power adaptor to VTR.**

See the operating instruction of the AC power adaptor for further information.

To remove the connecting plate
Proceed in the same way as the battery pack.

Other power sources
The AC-V30 or AC-V55 AC power adaptor can also be used.

(E-8)



Using the Car Battery

(E-8)

The DCP-77 DC pack (not supplied) is required.

1 **Align the right side of the DC pack with the line on the camcorder and slide it to the right.**

2 **Connect the car battery cord to the cigarette lighter socket of a car (12 V or 24 V).**

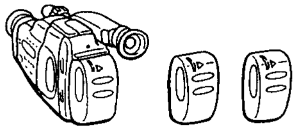
To remove the DC pack
Proceed in the same way as the battery pack.

Other options
The AC-V55 AC power adaptor and the DCC-16AE car battery cord can also be used to operate this camcorder on a 12 V or 24 V car battery.

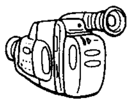
Using the Best of the Battery Pack

How to prepare the rechargeable battery packs

Have a sufficient battery pack power to perform 2 or 3 times as much recording than you have planned.
"Battery life" as indicated in the instruction manual or catalogue of the camcorder is measured by the continuous recording time of the camcorder, placed at a room temperature using a full-charged battery.

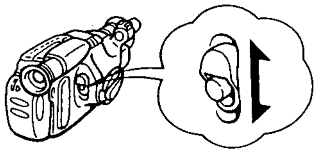


Battery life is shorter in a cold climate.
Battery efficiency is decreased and the battery will be used up more quickly.



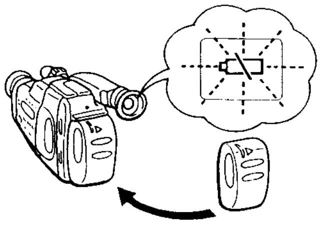
Turn the STANDBY switch of the camcorder off when not recording to save battery power.

A smooth recording can be made even if recording is stopped and started again.
While positioning the subject, selecting an angle, or looking through the viewfinder, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.



When the rechargeable battery pack should be replaced

When the ⊏⊐ mark in the viewfinder changes from slow blinking to rapid blinking while you are recording.
Turn off the power switch of the camcorder and replace the battery pack. Leave the tape in the camcorder in order to obtain a smooth recording after the battery pack is replaced.

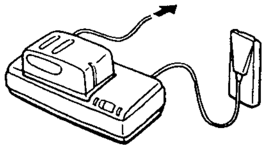


Notes on charging

Before using the battery pack, charge it sufficiently. A brand-new battery pack is not charged.

Recharge the battery pack when it is exhausted.

- If recording is completed before the ⊏⊐ mark appears in the viewfinder, it is recommended that you remove the tape, set POWER to CAMERA, slide up STANDBY, and leave the camcorder until the ⊏⊐ mark blinks rapidly.
- **Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you fully discharge and fully charge the battery again.**



Recharge the battery pack before using.
If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged.
Charge it again but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Keep the terminals clean

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened.

When the terminals are not clean or when the battery pack has not been used for a long time, install and remove the battery pack from time to time. This will improve the contact condition. Also wipe the + and – terminals with a soft cloth or paper.

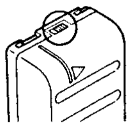
Notes on the rechargeable battery pack

Why the battery pack heats up
During charging or recording, the battery pack heats up. This means energy has been generated and a chemical change has occurred inside the battery pack, but this is not dangerous.

How to care for the battery pack

- Remove the battery pack from the camcorder after using it, and keep it in a cool place.
  When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is turned off. It causes overdischarging and will shorten battery life.
- The battery pack is always discharging even when it is not in use after charging. Thus, it is recommended you charge the battery before using.

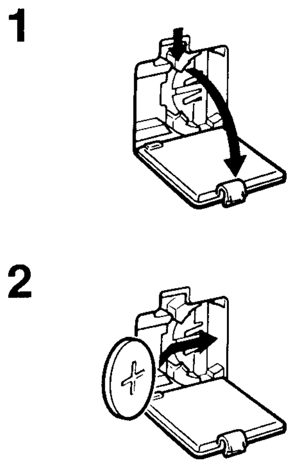
How to use the switch on the battery pack
This switch is provided so that you can remember the charging condition. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up.



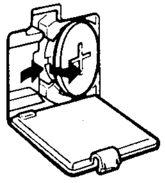
How many times can the battery pack be recharged
It can be fully charged and discharged about 500 times under normal temperatures. If the ⊏⊐ mark blinks rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Temperature during charging
Lower temperature require a longer charging time. Charging under temperatures ranging from 10°C to 30°C is recommended.

(F-1)



(F-2)



Setting the Date and Time

Inserting the Lithium Battery

(F-1)

This camcorder uses a lithium battery to activate the clock and to keep the titles in the memory.
Install the supplied lithium battery before operating it for the first time.

1 **Open the cover of the lithium battery compartment on the bottom.**

2 **Install the supplied CR2025 lithium battery with the ⊕ side facing out.**

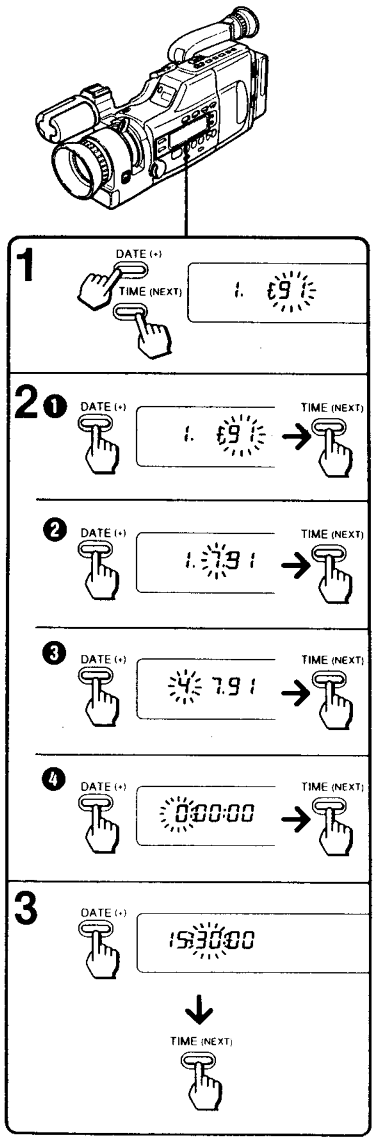
3 **Close the cover.**

To remove the lithium battery (F-2)
Press the side of the battery in the direction as indicated for installation.

Note on lithium battery life
The lithium battery lasts for approximately 1 year under normal operation. When the lithium battery becomes weak, the time indication keeps blinking in the display window and blinks in the viewfinder for about 5 seconds when the POWER switch is set to CAMERA. **In this case, keeping the battery pack or another power source connected, replace the lithium battery with a Sony CR2025. Use of other lithium batteries may present a risk of fire or explosion.** If the battery pack or other power sources were not attached during the lithium battery replacement, readjust the date and time after installing a new lithium battery.

Cautions
- Keep the lithium battery out of the reach of children.
  Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Be sure to observe the correct polarity when installing the battery.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

(F-3)



Setting the Date and Time

(F-3)

Before you begin
- Check that a power source is installed to the camcorder.
- Set the POWER switch to CAMERA and slide the STANDBY switch up.

Operation

1 **Press DATE (+) and TIME (NEXT) simultaneously for more than 2 seconds.**
The date indication blinks in the display window. The DATE button now functions as + (advance the number) and the TIME button functions as NEXT (execute). If you went passed the desired number, keep pressing the + button. The number eventually returns to the original one.

2 **Adjust the year ❶, month ❷, day ❸, hour ❹ in this order.**
First, adjust the blinking digits with +, and then press NEXT.

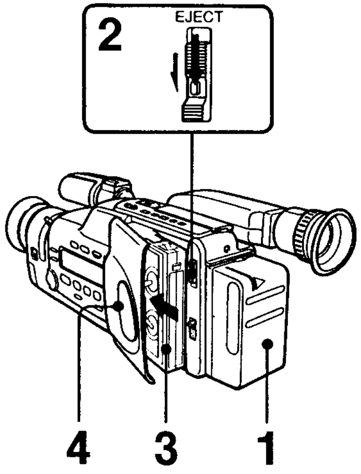
3 **Adjust the minute and press NEXT to set the seconds to "00".**
The clock starts operating.

To correct date and time setting
Repeat steps 2 and 3.

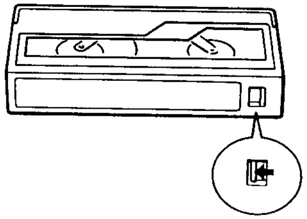
To advance the digits faster
Keep pressing +.

To check the preset date and time
Press DATE or TIME. When you press the same button again, the indication is changed to the counter indication.

(G-1)



(G-2)



Inserting Tapes

(G-1)

1 **Check that a power source is installed.**

2 **Press and slide the EJECT button.**
The cassette holder automatically opens. Do not open it forcibly while it is moving.

3 **Insert a cassette with the window facing outside.**

4 **Press the PUSH mark to close the cassette holder.**

Ejecting the Tape

1 **Check that a power source is connected.**

2 **Press and slide the EJECT button.**
The cassette holder automatically opens.

3 **Take out the tape.**

4 **Press the PUSH mark to close the cassette holder.**

Preventing Accidental Erasure

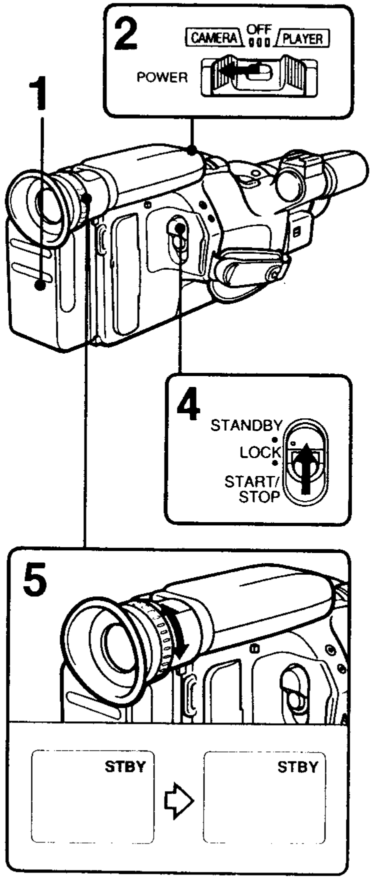
(G-2)

Slide out the red tab on the cassette to prevent recording. To re-record on the same tape, slide the tab in.

Notes on cassette handling

- Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the type and thickness of the tape, or if the tab is out or in, etc.
- Store tapes in their cases and keep them away from heat, humidity, direct sunlight, magnetic fields, dust and mold.

(H)



Adjusting the Viewfinder Lens

(H)

The position of the viewfinder lens for optimum vision varies depending upon the person. Adjust it when using the camcorder for the first time, or when using it after someone else.

1 **Check that a power source is installed.**

2 **Hold down the green button and slide the POWER switch to CAMERA.**

3 **Insert a cassette.**

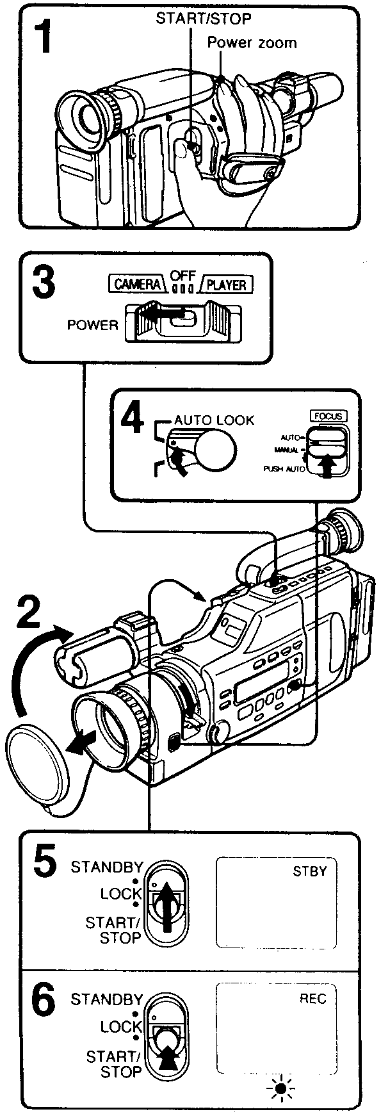
4 **Slide the STANDBY switch up.**

5 **Turn the viewfinder lens adjustment ring so that the "STBY" indication in the viewfinder comes into focus.**

When the viewfinder touches your nose
Press the PUSH SLIDE button and slide the viewfinder to the desired position.

Recording a Picture with the Automatic Adjustments

(I-1)



(I-1)

Before recording "once-only" events, we strongly recommend making a trial recording and checking that everything is working perfectly.

1 **Hold the camcorder as illustrated.**
Put your hand through the grip strap and check that your thumb easily touches the START/STOP button.
Do not cover the AF sensor under the lens with your fingers, etc.

2 **Remove the lens cap and attach it to the grip belt.**

3 **Hold down the green button and slide the POWER switch to CAMERA.**

4 **Set the AUTO LOCK switch to AUTO LOCK, the FOCUS switch to AUTO and turn the zoom lever downwards.**

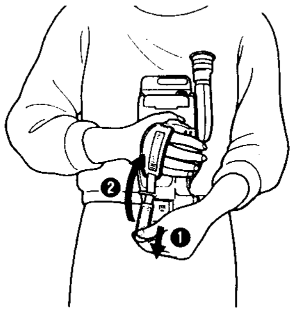
5 **Slide the STANDBY switch up until it clicks.**
"STBY" appears in the viewfinder. The camcorder is now set to the recording standby mode. The camcorder adjusts the focus automatically. Do not turn or stop the focus ring forcibly.

6 **Press the START/STOP button.**
"REC" appears and the red lamp lights in the viewfinder. The camcorder is recording.

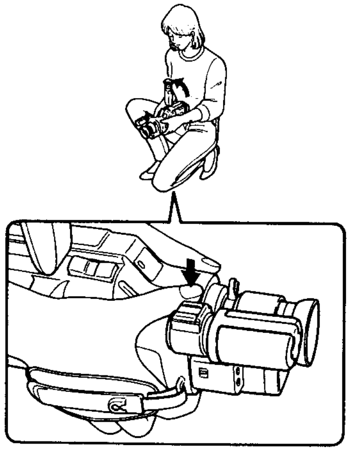
To stop recording momentarily
Press the START/STOP button again. The camcorder enters the standby mode with "STBY" indication in the viewfinder.

To stop recording
Slide the STANDBY switch down and set the POWER switch OFF.

(I-2)



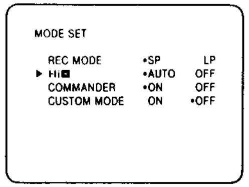
(I-3)



How to fix the grip strap
(I-2)
In step 1 on the previous page, ❶ hold the camcorder pressed to your body and ❷ pull the grip strap upwards.

For low-position shooting
(I-3)
The viewfinder can be turned up 90 degrees. Press the REC START/STOP button in the front of the camcorder instead of the START/STOP button to start and stop the camera recording.

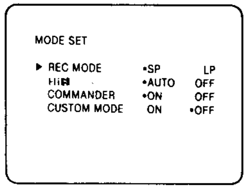
(I-4)



```
MODE SET

  REC MODE      •SP     LP
▶ Hi■           •AUTO   OFF
  COMMANDER     •ON     OFF
  CUSTOM MODE    ON    •OFF
```

(I-5)



```
MODE SET

▶ REC MODE      •SP     LP
  Hi■           •AUTO   OFF
  COMMANDER     •ON     OFF
  CUSTOM MODE    ON    •OFF
```

How to record in the Hi8 mode

(I-4)

The camcorder is set to record in the AUTO mode which automatically records in the Hi8 mode when a Hi8 tape is used. To record in the standard mode with the Hi8 tape, change the setting in the menu.

See "Using the Menu for Camera Recording" on page 38. On the playback compatibility of Hi8 tape and standard tape refer to page 7.

When recording a long continuous programme

(I-5)

The camcorder is set to record in the SP (standard play) mode. To record a long continuous programme, change the setting in the MODE SET menu to the LP (long play) mode. In the LP mode, you can record as twice long as in the SP mode. See "Using the Menu for Camera Recording" on page 38. Also, be sure to have a sufficient battery pack.

Notes on recording

- To record from the beginning of the cassette, run the tape for about 15 seconds before recording. This will avoid missing the starting point when the tape is played back.
- If the POWER switch is moved during recording, the tape will stop.
- When moving from indoors to outdoors, or vice versa, slide the STANDBY switch up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

Note on standby mode

If you leave the camcorder in the standby mode for 5 minutes or more, the camcorder will automatically be turned off. To resume the standby mode, slide the STANDBY switch down once and slide it up again. To start recording, press the START/STOP button.

Notes on light sources

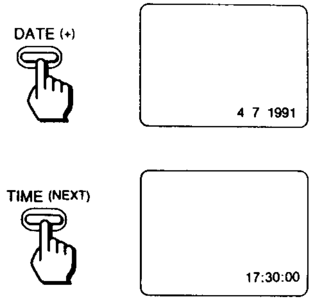
- A vertical band may appear when a subject such as a candle flame or a light is shot against a dark background.
- If you shoot an object under bright lighting conditions just after shooting in a dark place, the picture may not appear in the viewfinder. In this case, point the camcorder to another direction.

Brightness Levels

The single greatest influence on picture quality is the brightness level. Using the following chart as a reference, take a few minutes to familiarize yourself with brightness levels to improve your recording.

Snow-covered mountains Snow fields Sandy beach, clear day in summer	Unit: lux	ND filter recom-mended
Clear day, mid-day (100,000)	100,000	Normal Recording
Clear day, mid-afternoon (35,000) Overcast day, mid-day (32,000)	10,000	
Overcast day, one hour after sunrise (2,000) Office lit by fluorescent lamps, near window (1,000) Clear day, one hour before sunset (1,000) Department store counter (500–700)	1,000	
Station wicket (650) Office lit by fluorescent lamps (400–500) Room lit by two 30 W fluorescent lamps (300)	500	
Underground station platform (300)	300	
Arcade at night (150–200)	100	
Theater lobby (15–35) Candlelight (10–15)	10	Video light recom-mended

(I-6)



To Record Date or Time

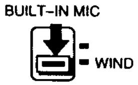
(I-6)

1 **Set the camcorder in the camera recording standby or camera recording mode.**

2 **Press the DATE button to indicate the date or the TIME button to indicate the time.**
The date or time displayed in the viewfinder will be recorded together with the picture.

To stop recording date or time
Press the DATE or TIME button. The indication is cleared and the recording continues.

(I-7)

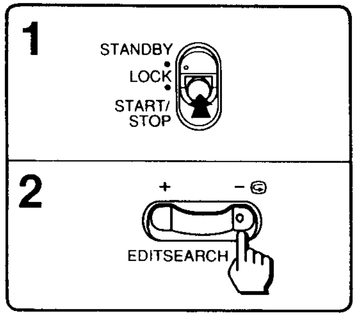


When there is Strong Wind

(I-7)

Set the BUILT-IN MIC selector to WIND.
The noise resulting from the wind will be reduced.
After recording, set it to the upper (green) position.

(I-8)



To Check the Last Portion of the Recording

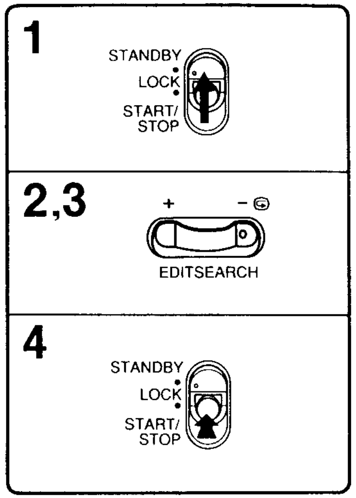
(I-8)

1 **Set the camcorder in the recording pause mode by pressing the START/STOP button.**

2 **Press the ⊖ side of the EDITSEARCH button.**
The last few seconds of the recorded portion is rewound and then is played back in the viewfinder. After a few seconds of playback, the camcorder returns to the recording pause mode.

If the picture was not recorded
The video heads may be contaminated. Clean the heads using the Sony V8-25CLH video head cleaning cassette or the equivalent.

(I-9)



To Re-record on a previously Recorded Portion

(I-9)

1 **Slide the STANDBY switch up.**
The camcorder enters the standby mode.

2 **Look in the viewfinder and search for the point from where you want to begin the recording.**
Keep pressing the + side of the EDITSEARCH button to advance the picture at a normal playback speed or the − side to reverse the picture.

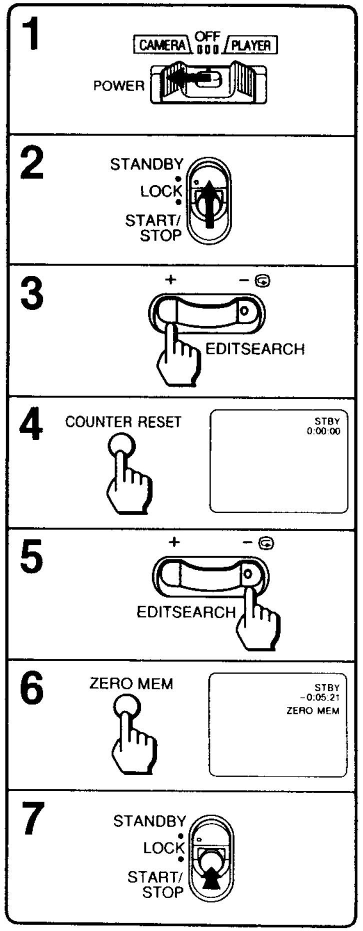
3 **At the desired point, release the EDITSEARCH button.**

4 **Press the START/STOP button to start recording.**

As long as the tape is not removed, the re-recorded picture will be smoothly connected even if the STANDBY switch is slid down and slid up again, or the power is turned off and on.

To stop recording
Slide the STANDBY switch down.

(I-10)


1
CAMERA
OFF
PLAYER
POWER
2
STANDBY
LOCK
START/
STOP
3
+
−
EDITSEARCH
4
COUNTER RESET
STBY
0:00:00
5
+
−
EDITSEARCH
6
ZERO MEM
STBY
−0:05:21
ZERO MEM
7
STANDBY
LOCK
START/
STOP

To Re-record a Picure in the Middle of a Recorded Tape (Insert Recording)

(I-10)

1 **Hold down the green button and slide the POWER switch to CAMERA.**

2 **Slide the STANDBY switch up.**
The camcorder enters the recording standby mode.

3 **While looking in the viewfinder, keep pressing the + or − side of the EDITSEARCH button and release it at the point where the insertion should end.**

4 **Press the COUNTER RESET button.**
The counter is reset to "0:00:00".

5 **While looking in the viewfinder, keep pressing the − side of the EDITSEARCH button and release the button at the point where the insertion should start.**

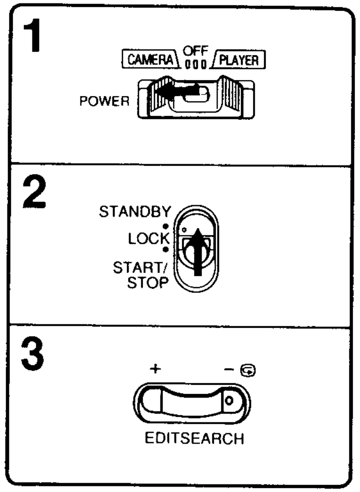
6 **Press the ZERO MEM buttton.**
The ZERO MEM indication appears. The insert end point is stored in the memory.

7 **Press the START/STOP button.**
Insert recording starts. It stops automatically around the counter zero point.

To change the end point of the edit
Press the ZERO MEM button so that the ZERO MEM indication disappears. Start from step 3.

Note
The picture may be distorted at the end of the inserted portion when it is played back.

(I-11)


1
CAMERA
OFF
PLAYER
POWER
2
STANDBY
LOCK
START/
STOP
3
+
−
EDITSEARCH

Playing Back the Picture Instantly

(I-11)

You can check the recorded picture in the viewfinder. The sound is not heard.

1 **Hold down the green button and slide the POWER switch to CAMERA.**

2 **Slide the STANDBY switch up.**

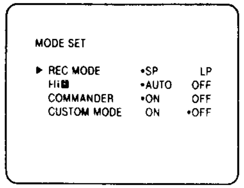
3 **Keep pressing the + or − side of the EDITSEARCH button to playback the picture.**
+ side: To view the playback picture.
− side: To view the playback picture in reverse.

To stop playback
Release the EDITSEARCH button.

To monitor the sound while viewing the playback picture in the viewfinder

1 Connect the headphones to the ∩ jack.
2 Hold down the green button and slide the POWER switch to PLAYER.
3 Press ◀◀ to rewind the tape and press ☐ where you want to start playing back.
4 Press ▷ to start playback.

(J-1)



Using the Menu for Camera Recording

MODE SET menu, CUSTOM PRESET menu, and DEMONSTRATION menu can be used for camera recording. In the MODE SET menu, various settings to further enjoy the features of the camcorder can be selected. In the CUSTOM PRESET menu, the camcorder can be set to record in the desired picture tone. In the DEMONSTRATION menu, the camcorder displays the various indications and the operations available.

MODE SET Menu

(J-1)

REC MODE SP/LP

- Select SP to record in the SP (Standard play, approximately 2.0051 cm/second) mode.
- Select LP to record in LP (Long play, approximately 1.0058 cm/second) mode. It is useful for recording a long continuous programme. The quality of the playback picture in the LP mode, however, will not be as good as that in the SP mode.

Hi8 AUTO/OFF

- Select AUTO to set the recording mode (Hi8 or normal) automatically depending upon the tape being used.
- Select OFF if you wish to record in the normal mode regardless of the type of tape being used.

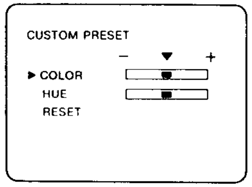
COMMANDER ON/OFF

- Select ON when using the supplied Commander for camera recording.
- Select OFF when the supplied Commander will not be used for camera recording.

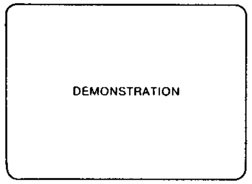
CUSTOM MODE ON/OFF

- Select ON to perform camera recording based on the setting made in the CUSTOM PRESET menu. See page 98.
- Select OFF to perform camera recording without the setting made in the CUSTOM PRESET menu.

(J-2)



(J-3)



CUSTOM PRESET Menu

(J-2)

The camera can be preset to record in the desired picture using the CUSTOM PRESET menu. The items that can be preset are COLOR and HUE. See "Custom Preset Function" on page 98 for details.

DEMONSTRATION Menu

(J-3)

The camcorder will automatically demonstrate the manual modes, programmed AE modes, title modes, MODE SET menu for camera recording, and the CUSTOM PRESET menu. The sequence can be monitored in the viewfinder or on a TV screen if connected.

Operation

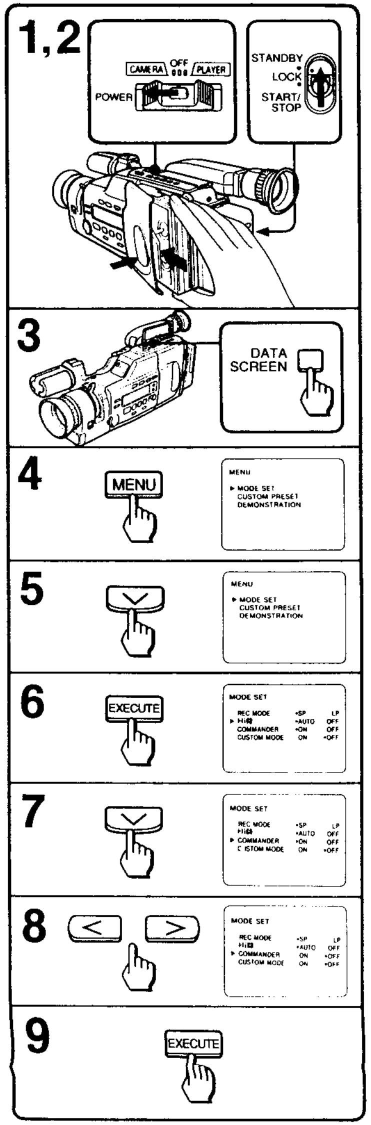
1 **Store 2 titles in the memory referring to pages 64 to 66.**

2 **To monitor the sequence on the TV screen, connect the camcorder and the TV referring to pages 41 to 43 and press DATA SCREEN.**

3 **Call up the MENU display and select DEMONSTRATION referring to page 40.**

4 **To get out of the DEMONSTRATION menu, press <, >, or ∨.**
To return to the MENU display, press MENU.

(J-4)


1,2
CAMERA
OFF
PLAYER
POWER
STANDBY
LOCK
START/STOP
3
DATA SCREEN
4
MENU
MENU
▶ MODE SET
CUSTOM PRESET
DEMONSTRATION
5
MENU
▶ MODE SET
CUSTOM PRESET
DEMONSTRATION
6
EXECUTE
MODE SET
REC MODE •SP LP
▶ Hi•AUTO OFF
COMMANDER •ON OFF
CUSTOM MODE ON •OFF
7
MODE SET
REC MODE •SP LP
Hi •AUTO OFF
▶ COMMANDER •ON OFF
CUSTOM MODE ON •OFF
8
<
>
MODE SET
REC MODE •SP LP
Hi •AUTO OFF
▶ COMMANDER ON •OFF
CUSTOM MODE ON •OFF
9
EXECUTE

How to Call Up the Menu Display

(J-4)

Example: To select COMMANDER OFF.

1 **Set the POWER switch to CAMERA and insert a cassette.**

2 **Slide the STANDBY switch up.**

3 **Press the DATA SCREEN button to display the menu on the TV screen.**

4 **Press the MENU button.**
The MENU display appears.

5 **Press ∨ and move cursor to the desired item.**

6 **Press the EXECUTE button.**
The selected menu appears.

7 **Press ∨ and move cursor to the desired item.**

8 **Press < or > to select the desired setting.**

9 **Press the EXECUTE button.**
The setting is stored in the camcorder and the menu display is cleared from the viewfinder.

The setting is stored in the memory even if the POWER switch is set to OFF or the battery pack is removed, as long as the lithium battery is installed.

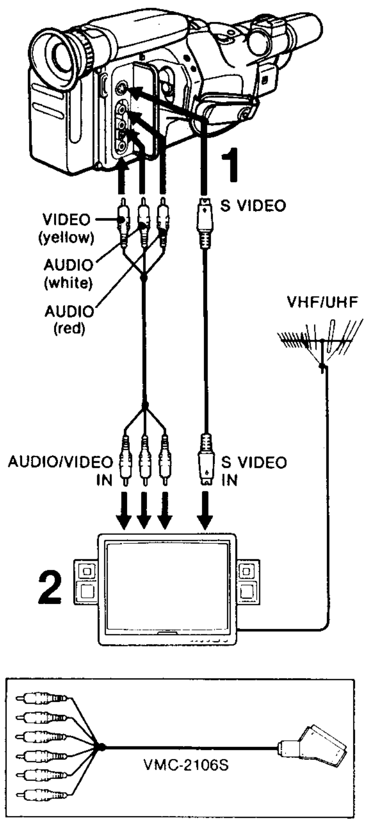
To display another menu
Start from step 1 in "How to Call Up the Menu Display."

To return to the original screen
Press the MENU button.

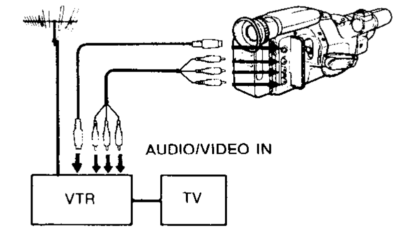
To make multiple settings within one menu
After step 7 in "How to Call Up the Menu Display", press ∨ and move cursor to the desired item.

To clear the indication from the TV screen
Press the DATA SCREEN button again.

(K-1)


1
S VIDEO
VIDEO (yellow)
AUDIO (white)
AUDIO (red)
VHF/UHF
AUDIO/VIDEO IN
S VIDEO IN
2
VMC-2106S

(K-2)


AUDIO/VIDEO IN
VTR
TV

Connections for Playback

To view the playback picture on the TV screen, the camcorder and TV and/or the VTR must be connected properly. Check the following connecting examples and go to the appropriate section to make the connections required.

Case 1: Connecting the camcorder to a TV with video/audio input jacks.
Case 2: Connecting the camcorder to a TV without video/audio input jacks.
For the camcorder supplied with the RFU-90E RFU adaptor.

Case 3: Connecting the camcorder to a TV without video/audio input jacks.
For the camcorder supplied with the RFU-89EA RFU adaptor.

Case 1: Connecting to a TV with Video/Audio Input Jacks

(K-1)

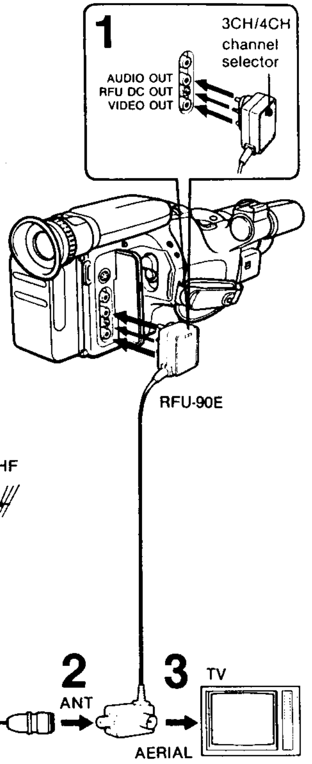
1 **Connect the camcorder and the TV using the supplied AV connecting cable.**
- If your TV has an S video input jack, connect the S VIDEO jack on the camcorder and the S video input jack on the TV using the supplied S VIDEO connecting cable.
- If your TV is a monaural type, connect only the white plug for audio on the TV and select "HIFI SOUND 1" in the menu. See "Selecting the Monitor Sound" on page 48.
- If your TV has a 21-pin connector, use a connecting cable such as the VMC-2106S (not supplied).

2 **Set the TV/VIDEO selector on the TV to VIDEO.**

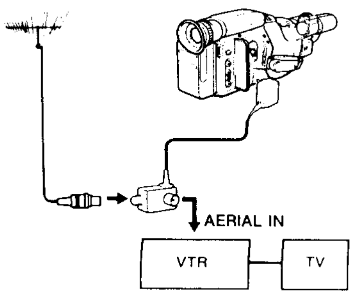
If your TV is connected to VTR
(K-2)
Connect the camcorder to the VTR instead of TV.

Note
For details on the TV, refer to the operating instructions of the TV.

(K-3)



(K-4)



Case 2: Connecting to a TV without Video/Audio Input Jacks

For the camcorder supplied with the RFU-90E RFU adaptor
(K-3)

Step 1
Connecting the camcorder, the RFU adaptor, and the TV.

1. **Connect the RFU adaptor to the camcorder.**
2. **Connect the aerial and the RFU adaptor.**
3. **Connect the RFU adaptor to the TV.**

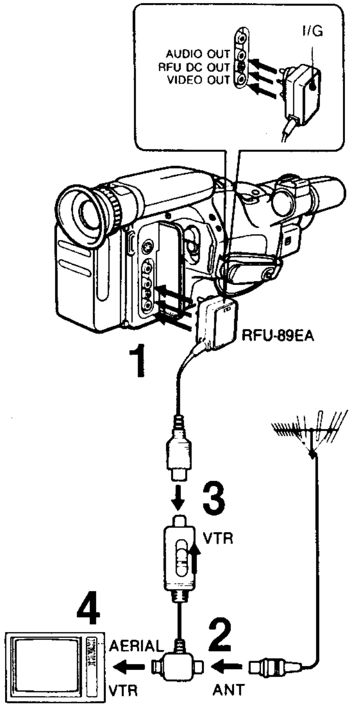
Step 2
Selection of the TV programme position to monitor the camcorder playback.

1. **Set the RF unit selector on the RFU adaptor to either 3CH or 4CH, whichever is not active in your area.**
2. **Turn on the TV and select the 0 position.**
3. **Tune the TV so that picture and sound from the camcorder are received.**

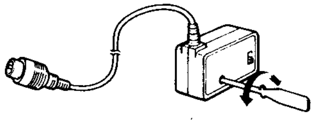
Notes
- Whenever playing back a tape, be sure to set the TV to the 0 position.
- In this connection, the sound will be in monaural.
- When you watch a TV programme, turn off the camcorder or disconnect the RFU adaptor from the camcorder.

If your TV is connected to a VTR
(K-4)
Connect the camcorder to the VTR instead of TV.

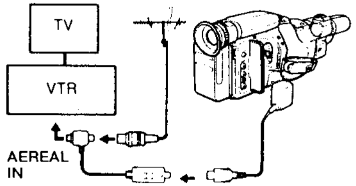
(K-5)



(K-6)



(K-7)



Case 3: Connecting to a TV without Video/Audio Input Jacks

For the camcorder supplied with the RFU-89EA RFU adaptor
(K-5)

Step 1
Connecting the camcorder, the RFU adaptor, and the TV

1. **Connect the RFU adaptor to the camcorder.**
2. **Connect the aerial and the aerial selector.**
3. **Set the ANT/VTR selector on the aerial selector to VTR.**
4. **Connect the aerial selector to TV.**

Step 2
Selection of the TV programme position to monitor the camcorder playback.

1. **Set the I/G selector on the RFU adaptor according to the TV system used in your area.**
2. **Turn on the TV and select a programme position that is not active in your area.**
3. **Set the POWER switch of the camcorder to CAMERA and slide the STANDBY switch up.**
4. **Tune the TV so that the picture and sound from the camcorder is received.**
   (For details, refer to the operating instructions of the TV.)

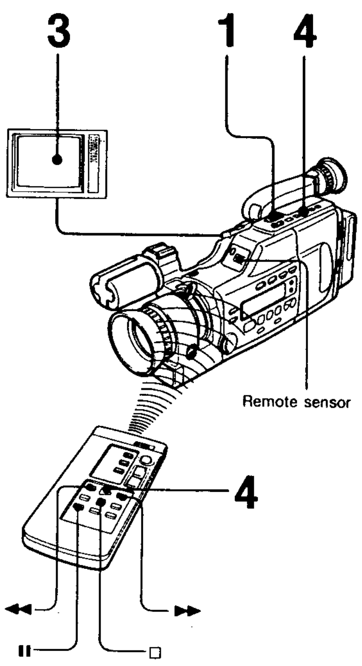
When the playback picture is not free of disturbance

1. **Set the ANT/VTR selector on the aerial selector to ANT.**
2. **Select a programme postion between UHF channels 30 and 39, so that the TV shows no picture and a steady restling sound or no sound is heard.**
3. **Set the ANT/VTR selector on the aerial selector to VTR.**
4. **Turn the screw on the RFU adaptor slowly with the supplied screwdriver so that the playback picture is clearly displayed on the TV screen. (K-6)**

If your TV is connected to a VTR (K-7)
Connect the camcorder to the VTR instead of the TV.

Note
In this connection, the sound will be in monaural.

(L-1)



Playing Back a Tape

Use the buttons on the camcorder as well as the buttons on the Commander. The Commander is useful when operating the camcorder from a distance. Be sure to select COMMANDER ON in the menu before operation. (See page 50.)

- When you use an optional wired remote commander, set to COMMANDER OFF.
- When you use the AC power adaptor, set the CHARGE/VTR selector to VTR.

Operation

(L-1)

1 **Hold down the green button and slide the POWER switch to PLAYER.**

2 **Insert a cassette.**

3 **Turn on the TV and the VTR.**
- For a TV with video/audio input jacks: Set the TV/VIDEO selector to VIDEO.
- For a TV without video/audio input jacks: Select the programme position for playing back the camcorder.

4 **Press ▷.**
Playback starts.
The ▷ on the camcorder can also be used.

To view a still picture
Press II during playback.

To resume playback
Press ▷ or II again.

To stop playback
Press □.

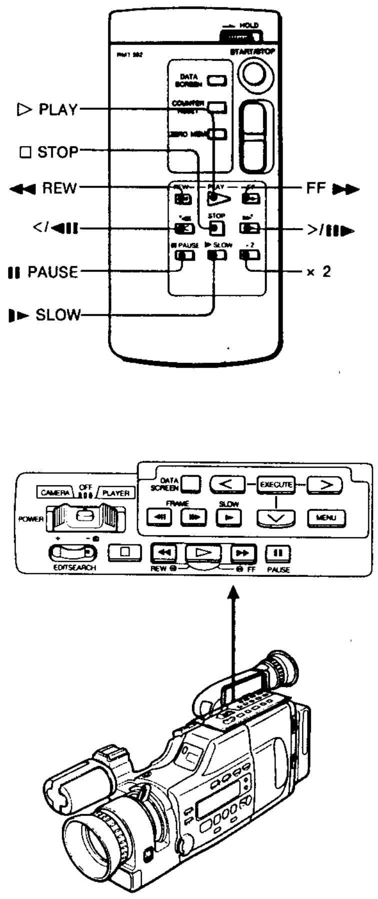
To rewind the tape
Press □ and then ◀◀.

To advance the tape rapidly
Press □ and then ▶▶.

After playback
Set the POWER switch on the camcorder to OFF and the CHARGE/VTR selector on the AC power adaptor to STANDBY.

Notes
- When the still picture lasts for 5 minutes or more, the camcorder automatically enters the stop mode.
- This camcorder plays back a tape recorded in the SP and LP mode. The playback mode is automatically switched depending upon the mode of the recorded tape inserted.

(L-2)



Various Playback Modes

(L-2)

To view a still picture (playback pause)
Press II during playback.
II◀ or ▶II appears in the viewfinder.
To resume normal playback, press ▷ or II.

To change the playback direction
Press </◀II for the reverse or II▶/> for the forward direction during playback.
– × 1 or × 1 appears in the viewfinder.
To resume normal playback, press ▷.

To view the picture at 1/5 speed (slow playback)
Set the playback direction with </◀II or II▶/>, and then press I▶ during playback.
◀I or I▶ appears in the viewfinder.
When slow playback lasts for 1 minute or more, forward or reverse playback at normal speed starts automatically, according to the tape direction.
To resume normal playback, press ▷.

To view the picture at double speed (Commander only)
Set the playback direction with </◀II or II▶/>, and then press × 2 on the Commander.
– × 2 or × 2 appears in the viewfinder.
To resume normal playback, press ▷.

To view the picture frame-by-frame
Press </◀II or II▶/> in the still picture mode. Each press of the button moves the picture one frame. ◀II or II▶ appears in the viewfinder momentarily. If you keep pressing </◀II or II▶/>, playback at 1/25 speed starts.
To resume normal playback, press ▷.

To locate the desired scene — Picture search
Keep pressing ◀◀ or ▶▶ during playback in the still picture mode. ⏪ or ⏩ appears in the viewfinder.
To resume normal playback, release the button.

To locate the desired scene quickly — Skip scan
Press ◀◀ while rewinding or ▶▶ while advancing the tape rapidly. ⏪ or ⏩ appears in the viewfinder.
To resume normal playback, press ▷.

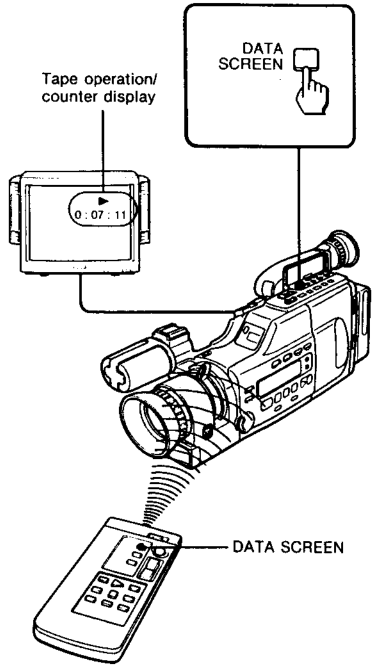
Notes during the various playback

- Sound can be heard in the double speed forward playback.
  - — The sound has noise.
  - — With a stereo tape, the sound is heard in monaural.
  - — With a dual sound recorded tape, the main sound is heard.
- Noise may appear in the still picture.
- Streaks may appear when pressing the ◀◀ or ▶▶.
- Streaks may appear when playing back a tape recorded in the LP mode in the still, frame-by-frame, or slow.
- The colour of the picture may change during still, frame-by-frame, slow or when using the ◀◀ or ▶▶ button.

If picture is noisy during frame-by-frame or slow playback

Adjust the picture referring to "PICTURE ADJUST menu" (page 51) while playing back the tape in slow speed.
However, the noise may not be completely eliminated.

(L-3)



Displaying the Information in the Viewfinder onto the TV Screen

(L-3)

Connect the camcorder and the TV properly and press the DATA SCREEN button.
The indication in the viewfinder is superimposed on the TV screen. This function is convenient to monitor the indications in the viewfinder during menu operations or when the camcorder is remotely operated by the Commander.

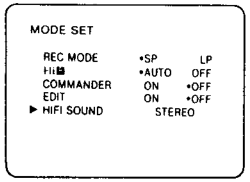
To clear the indication

Press the DATA SCREEN button again.

Note

When using the camcorder as a playback VTR during editing, be sure to clear the indications from the TV screen. Otherwise, the indications will be recorded with the picture.

(L-4)



MODE SET

REC MODE •SP LP

Hi▣ •AUTO OFF

COMMANDER ON •OFF

EDIT ON •OFF

▶ HIFI SOUND STEREO

Selecting the Monitor Sound

(L-4)

The playback sound can be selected by the menu.
Refer to "Using the Menu for Playback or Editing" (page 50) for details.

When playing back a dual sound recorded tape
Normally set the HIFI SOUND setting to STEREO. When the dual sound recorded tape is played back, select $\boxed{1}$ or $\boxed{2}$ to hear the desired sound.

Note
Always return the setting to STEREO. Otherwise, the tape recorded in stereo will not be played back properly.

Note on PCM recording and playback
This camcorder cannot perform PCM recording or playback.

Using the Tape Counter

The counter in the viewfinder and the display window indicates the elapsed time of the recording or playback.

To Index the Entire Tape

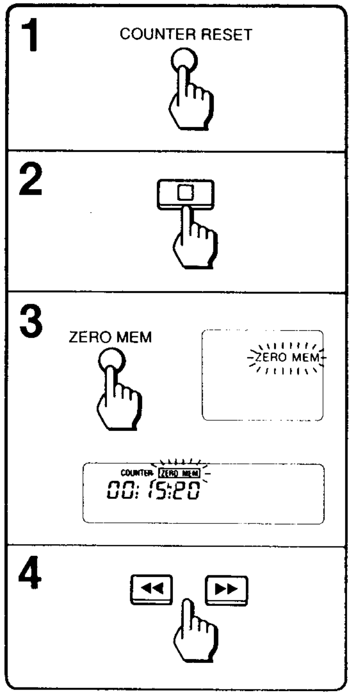
Press the COUNTER RESET button at the beginning of the tape so that the counter shows "0:00:00".
Write down the counter reading at a particular point so that you can easily find that point later by referring to the tape counter.

To Return to a Pre-registered Point

(M)

1. **During playback, press the COUNTER RESET button at the point to be located later.**
2. **Press □ when the playback is finished.**
3. **Press the ZERO MEM button.**
   The "ZERO MEM" indication blinks in the viewfinder and the display window.
4. **Press ◀◀ or ▶▶.**
   The tape rewinds or advances and stops automatically when the counter reaches approximately "0:00:00".

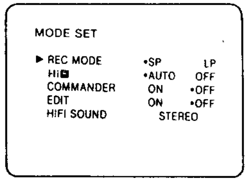
(M)



To cancel the ZERO MEM function
Press the ZERO MEM button.

Notes on the counter and the ZERO MEM button
- The counter reading and the actual point on the tape may not correspond exactly. Use the counter as a guide. There will be a lag of several seconds especially when fast-forward and rewind operation is repeated or when playing back a tape with both the SP mode and LP mode recording.
- Be sure to press the ZERO MEM button after the tape stops. It does not function during recording or playback.
- The ZERO MEM mode is automatically canceled after each operation.

(N-1)



Using the Menu for Playback or Editing

MODE SET menu and PICTURE ADJUST menu can be used for playback or editing. In the MODE SET menu, various settings to further enjoy the features of the camcorder can be selected. In the PICTURE ADJUST menu, the picture in the still or slow mode can be adjusted.

MODE SET Menu

(N-1)

COMMANDER ON/OFF

- Select ON when using the supplied Remote Commander for playback or editing.
- Select OFF when you do not use the supplied Remote Commander, or when you use an optional wired Remote Commander for playback or recording.

EDIT ON/OFF

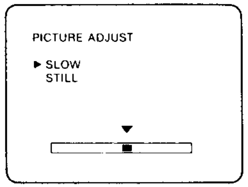
- Select ON when performing editing with the camcorder as the playback VCR to keep the degradation of picture resulting from editing to the minimum.
- Select OFF otherwise.

HIFI SOUND STEREO/1/2

- Normally select STEREO. The tape recorded in AFM Hi-Fi stereo will be played back in stereo.
- Select 1 or 2 to play back the desired sound of the dual sound recorded tape.

Note
REC MODE SP/LP and **Hi8** AUTO/OFF setting can be selected during camera recording.

(N-2)



PICTURE ADJUST Menu

(N-2)

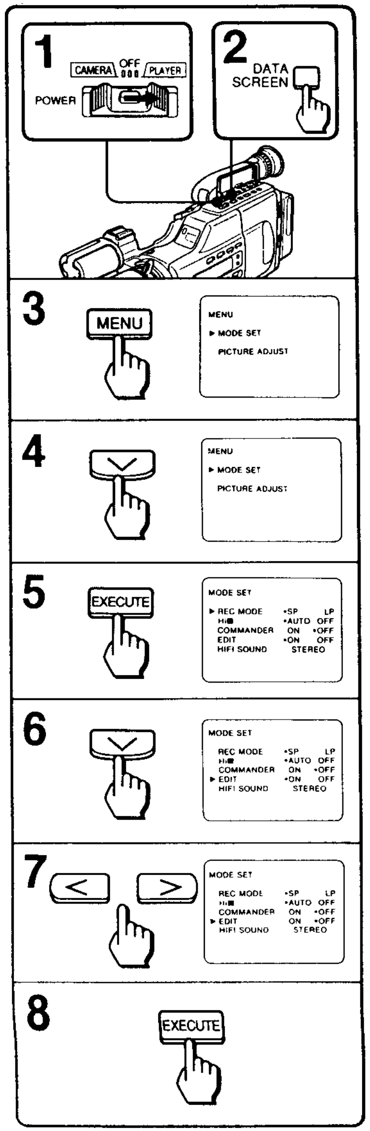
SLOW

Press < or > to clear out the noise bands that may appear on the top or bottom of the picture during slow playback. Adjustable only in the slow playback mode.

STILL

Press < or > so that the vertical shaking of the picture during still mode will stop. Adjustable only in the still mode.

(N-3)


1
CAMERA
OFF
PLAYER
POWER
2
DATA SCREEN
3
MENU
MENU
▶ MODE SET
PICTURE ADJUST
4
MENU
▶ MODE SET
PICTURE ADJUST
5
EXECUTE
MODE SET
▶ REC MODE •SP LP
Hi■ •AUTO OFF
COMMANDER ON •OFF
EDIT •ON OFF
HIFI SOUND STEREO
6
MODE SET
REC MODE •SP LP
Hi■ •AUTO OFF
COMMANDER ON •OFF
▶ EDIT •ON OFF
HIFI SOUND STEREO
7
<
>
MODE SET
REC MODE •SP LP
Hi■ •AUTO OFF
COMMANDER ON •OFF
▶ EDIT ON •OFF
HIFI SOUND STEREO
8
EXECUTE

How to Call Up the Menu Display

(N-3)
Example: To select EDIT OFF.

1 **Set the POWER switch to PLAYER and insert a cassette.**

2 **Press the DATA SCREEN button to display the menu on the TV screen.**

3 **Press the MENU button.**
The MENU display appears.

4 **Press ∨ and move cursor to the desired item.**

5 **Press the EXECUTE button.**
The selected menu appears.

6 **Press ∨ and move cursor to the desired item.**

7 **Press < or > to select the desired setting.**

8 **Press the EXECUTE button.**
The setting is stored in the camcorder and the menu display is cleared from the viewfinder.

The setting is stored in the memory even if the POWER switch is returned to OFF or the battery pack is removed, as long as the lithium battery is installed.

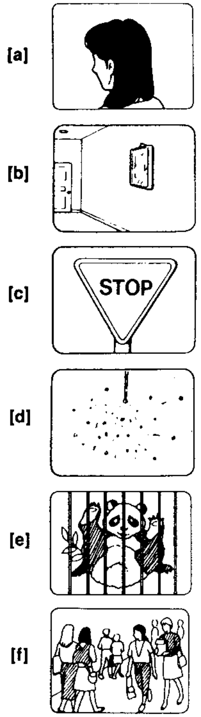
To display another menu
Start from step 1 in "How to Call Up the Menu Display."

To return to the original screen
Press the MENU button.

To make multiple settings within one menu
After step 6 in "How to Call Up the Menu Display", press ∨ and move cursor to the desired item.

To clear the indication from the TV screen
Press the DATA SCREEN button again.

(O-1)


[a]
[b]
[c]
STOP
[d]
[e]
[f]

Manual Focusing

When the FOCUS switch is set to AUTO, the auto focusing functions to easily get a in-focused picture under most shooting conditions. In the auto focusing function, the object is shot between 0.7 to 20 m away from the unit. But manual focusing is recommended under the following cases:

[a] to **[f]** corresponds to the illustrations. **(O-1)**

[a] Black objects which absorb the infrared beam
Ex. dark curtains or shade
[b] Objects in which the infrared reflection disperses
Ex. a smooth slanting surface (Auto focusing functions when the camera is aimed squarely at the subject.)
[c] Objects in which the infrared beam is reflected too much
Ex. traffic signs, a white wall, a mirror, or a subject through plate glass
[d] Objects not solid
Ex. fireworks, candle flame or smoke
[e] When there are other objects between the shooting object and this unit
Ex. an animal inside a cage or baby inside a cot
[f] Moving objects
Ex. a crowd or sports with lots of movement

- **Objects which emit infrared beams themselves**
  Ex. automatic doors or fluorescent lights
- **Objects more than 20 meters away from the recorder**
  Especially with an overcast day, or at night.

When the auto focusing does not function momentarily

- The camcorder is rapidly panned from a distant subject to a nearby subject with less contrast.
- Shooting fast moving objects.

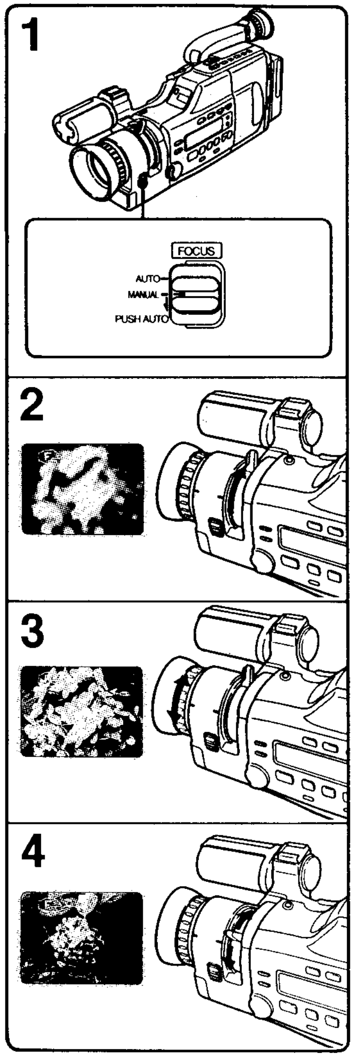
Some helpful hints

- When shooting relatively dark places, such as indoors, the depth of field in proper focus is very shallow.
- The figures on the focus ring indicate the distance between the object and the Φ mark on the camcorder.

The subjects in focus in the viewfinder in the auto focusing mode

When shooting the subject at 3 m, the focusing point of the object in the viewfinder will be in the center. When the subject is more than 3 m away, objects a little to the upper left of the center tend to be in focus. When the subject is less than 3 m away, objects a little to the lower right of the center tend to be in focus. This tendency becomes apparent when shooting a subject at less than 1 m.

(O-2)



Focusing Manually

(O-2)

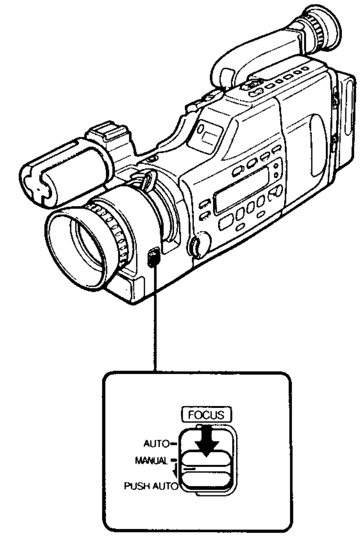
1 **Set the FOCUS switch to MANUAL.**
Check that the manual focus mark (F) appears in the viewfinder.

2 **Turn the manual zoom lever fully to the telephoto position.**

3 **Turn the focus ring to achieve sharp focus.**

4 **Move the zoom lever to set to the desired shot length.**

(O-3)



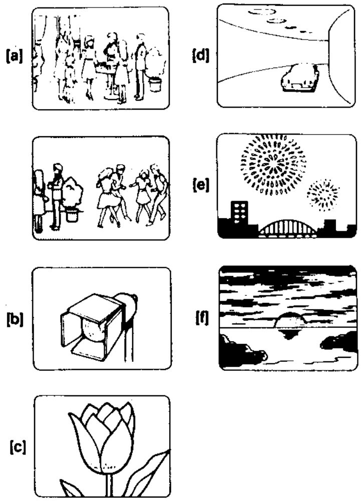
Shooting with Auto Focusing Momentarily

(O-3)

While shooting with manual focusing, press the FOCUS switch down (PUSH AUTO).
The auto focus functions while you are pressing the FOCUS switch down.

When the switch is released, manual focusing will resume. Use this switch when focusing on one object to the other for natural focusing. Shutter speed, white balance, aperture, and/or programmed AE modes will be retained to the previous setting.

(P-1)



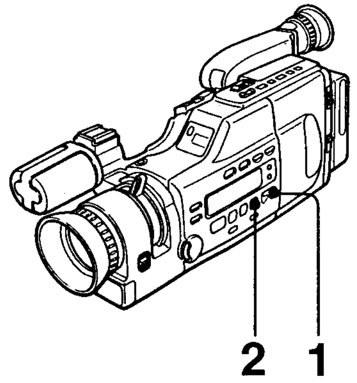
Adjusting the White Balance

In order to record the colour of the object as it is, the common method is to adjust the camcorder to record the white colour as white in various shooting conditions. This is accomplished by adjusting the white balance. When the AUTO LOCK switch is set to AUTO LOCK, the auto white balance function adjusts the white balance under most shooting conditions. But to record the colour of the subject more precisely, without being affected by the colour temperature of the ambient light, adjust the white balance manually.

[a] to **[f]** corresponds to the illustrations. **(P-1)**

	Conditions	Indication in the viewfinder
[a]	Lighting conditions change quickly	💡
[b]	Too bright, such as in photograph studios	
[c]	Monochromatic subject or background	▪
[d]	Under a sodium lamp	💡
	Under a mercury lamp	
	Under a colour matching fluorescent lamp	☀
[e]	Recording outdoors: a night view, neon signs, or fireworks	
[f]	Recording outdoors: scenes after sunset or before sunrise	

(P-2)



Adjusting the White Balance Manually

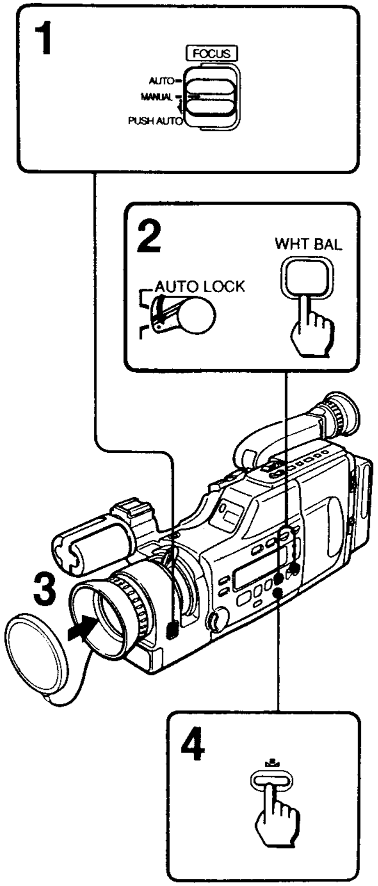
(P-2)

1 **Set the AUTO LOCK switch down.**

2 **Set to the appropriate white balance mode by pressing the WHT BAL button.**
The indication changes in the order below each time the button is pressed.

No indication → ⊡ → ☀ → 💡
↑ (auto)

(P-3)



Adjusting the White Balance Precisely

(P-3)

The one-push white balance function adjusts the white balance at the press of the button and maintains that condition. When the lighting condition changed or when recording subjects with different colour temperature, use the one push white balance function to achieve recording with natural colours without being affected by the ambient light.

1 **Set the FOCUS switch to MANUAL.**
The camcorder enters the manual focus mode.

2 **Set the AUTO LOCK switch down and press the WHT BAL button to call up the ⊡ indication.**
The ⊡ indication is blinking slowly.

3 **Attach the white lens cap to the camcorder and point it to a subject (outdoors) or to the light source (indoors).**

4 **Press the ⊡ button in the recording standby mode.**
The ⊡ indication will blink rapidly.

5 **The ⊡ indication stops blinking to indicate that the new white balance is stored in the memory.**
The memory is retained for approximately 1 hour even if the POWER switch is set to OFF or if the battery pack is removed.

When recording under fluorescent light
- Use the one push white balance function.
- Set the AUTO LOCK switch to AUTO LOCK.

(P-4)

Colour temperature (K)	Light source
↑ 10,000	Clear sky
8,000	
Blue	Slightly overcast
7,000	Cloudy, rainy
6,000	Flourescent lamp (daylight)
5,000	
White	Direct sunlight
	Fluorescent lamp (daylight)
4,000	1 hr. after/before sunrise/sunset
3,500	↑ Fluorescent lamp (off-white)
	Studio lamp
	Halogen lamp
3,200	
3,000	
Yellow	Tungsten lamp
2,500	30 min. after/before sunrise/ sunset ↓
Red	
2,000 ↓	Sunrise/sunset
	Candlelight

White Balance and Colour Temperature

(P-4)

The colour temperature indicates the relative reddishness or bluishness of light measured in Kelvin degrees (K). It increases as the light source gets bluish and decreases as the light source gets redder. It has no direct relation with brightness of the light. The camcorder automatically adjusts the white balance within the range shown in the diagram on the left.

What the ◭ indication means

- Slow blinking: white balance not adjusted
- Fast blinking: white balance being adjusted by the ◭ button.
- Stops blinking: white balance adjusted

When the ◭ indication does not stop blinking

The white balance cannot be adjusted and the ◭ indication does not stop blinking.

- When the camcorder was pointed to an object that was not white.
- When white balance adjustment was attempted without the white lens cap.

In these cases, point the camcorder to a bright light source or point the camcorder to a white object.

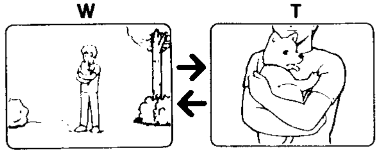
If the ◭ indication still does not stop blinking

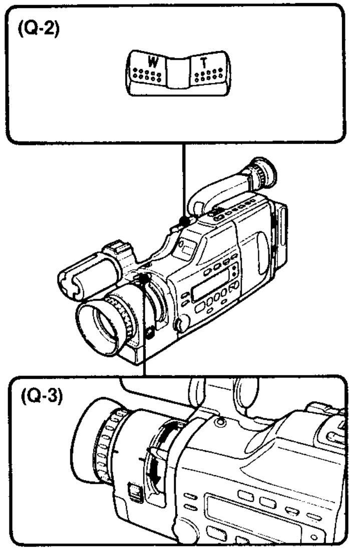
Set the AUTO LOCK switch to AUTO LOCK.

When the lighting condition changed

- Readjust the white balance by the ◭ button during the recording standby mode. The ◭ button does not function during recording.
- The white balance adjustment is affected by the setting of the aperture and shutter speed. When the aperture or shutter speed is adjusted manually, and the camcorder was moved from indoors to outdoors or vice versa, the white balance setting may not be correct. In this case, set the AUTO LOCK switch to AUTO LOCK again and readjust the white balance automatically.

(Q-1)





Zooming

(Q-1)

The size of the subject in the screen can be changed. Use "zoom-in" for dramatic close-ups and "zoom-out" for panoramic long shots. Also, use zooming during manual focusing. The camcorder's zoom button offers a variable speed zooming; pressing it firmly for high speed zooming and softly for relatively slow zooming.

Power Zooming — for Smooth and Constant Zooming

(Q-2)

Press the T side of the power zoom button for telephoto.

This gives a close up shot of an object far from the lens.

Press the W side of the power zoom button for wide.

This gives a broad view of the scene.

Manual Zooming — to Create a Dramatic Effect

(Q-3)

Turn the manual zoom lever upward for telephoto and downward for wide.

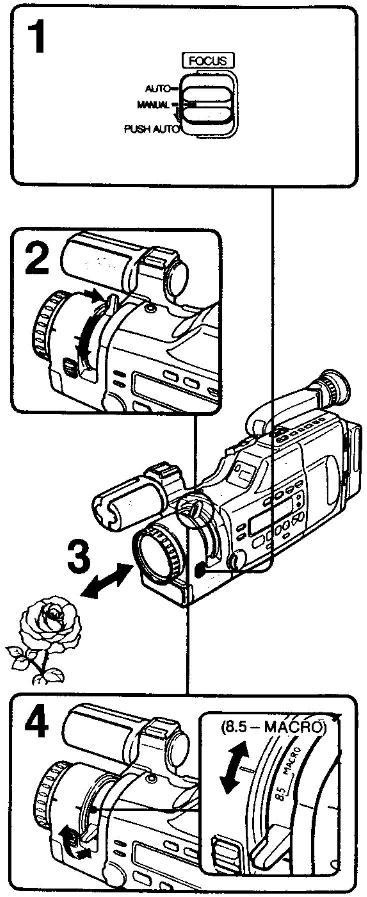
Focal length of this camcorder

The focal length is 8.5 mm to 68 mm. This is approximately 46 mm to 368 mm converted to the focal length of a 35 mm camera.

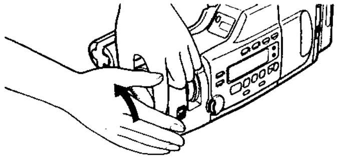
Using the zoom button on the Commander

Variable speed zoom cannot be operated with the zoom button on the Commander.

(R-1)



(R-2)



Close-ups (Macro)

Tiny objects such as flowers, insects, and images in photographs, can literally fill the screen using the close-up function. It is also useful when recording a title.

(R-1)

1 **Set the FOCUS switch to MANUAL.**
Check that the manual focus mark (F) appears in the viewfinder.

2 **While pressing the green macro button, turn the zoom lever to the left as far as it will go into the MACRO range.**

3 **Bring the camcorder as close as necessary to the subject to obtain the desired subject size.**
The subject can be as close to the lens surface as approximately 10 mm.

4 **Turn the zoom lever within the MACRO range to focus sharply.**

When you finish the close-up shooting
Turn the zoom lever out of the MACRO range.

Notes

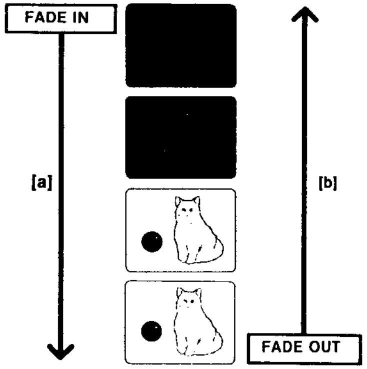
- Auto focusing does not function in macro shooting.
- If the object is closer than 10 mm, it cannot not be brought in focus.

If the lens hood touches the object (R-2)
Remove the lens hood. Hold the focus ring and turn the hood by pressing it with your palm. Do the same when attaching or removing the filter or conversion lens (not supplied).

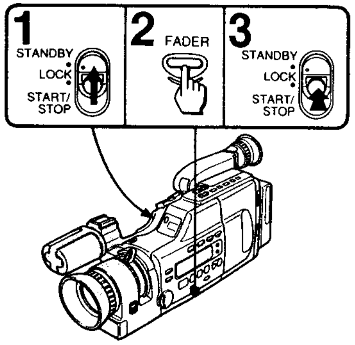
When you cannot come close to the object
You can record a close-up picture between 0.7 to 1.3 m away from the object.
Turn the zoom lever to the telephoto end position.

Recommended accessory
When shooting in macro, the depth of field is very shallow. Pay attention to focusing. To keep the object in focus, use a tripod.

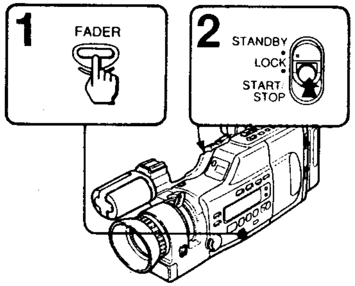
(S-1) (S-2)



(S-3)



(S-4)



Fade-in and Fade-out

When fading-in, the picture will gradually appear from a black screen. The sound will gradually increase in accordance with the picture. **(S-1)**
When fading-out, the picture will gradually disappear into a black screen. The sound will gradually decrease in accordance with the picture. **(S-2)**
Use this function to give a professional effect to your recording.

To Fade-in

(S-3)

1 **Slide the STANDBY switch up.**
The camcorder enters the recording standby mode.

2 **Press the FADER button.**

3 **Press the START/STOP button.**
Fade-in is performed and recording starts.

To Fade-out

(S-4)

1 **Press the FADER button while recording.**

2 **Press the START/STOP button to stop recording.**
Fade-out is performed and then recording stops.

When does the FADER function work
The FADER function works only when the camcorder is in the recording standby mode or recording mode.
It does not function in the stop mode.

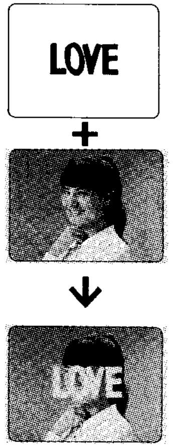
To cancel the fade-in/fade-out function before it is preformed
Press FADER before pressing START/STOP.

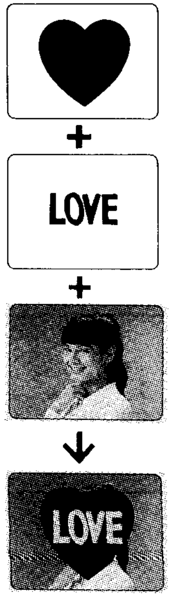
To use the fade-in/fade-out function repeatedly
Start from step 1 each time.

When the title, date or time is displayed
The title, date or time does not fade-in or fade-out.

Recording a Title

(T-1)





(T-1)

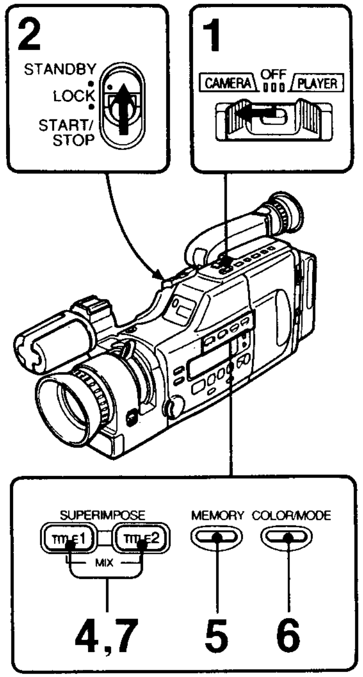
Original hand-lettered message or illustration can be superimposed over the picture. Two titles can be stored and 8 different colours can be used for the titles.

This function can be used during the following situations.

(1) During camera recording.
(2) During playback.
(3) During camera recording, superimpose a title.
Then superimpose different titles during playback.
(4) During editing, use the camcorder as a playback VTR. Titles can be superimposed over the playback picture (with or without a title superimposed) and then recorded together onto the recording VTR.

Before recording, playback, or editing, store the desired title in the camcorder.

(T-2)



Storing a Title

(T-2)

Before storing

- Prepare title cards.
  Use a plain, white card and draw titles in dark colour and thick lines. Street signs and printed materials with high contrast can be used as a title.
- Install the lithium battery (page 26).
  The titles cannot be kept in the memory unless the lithium battery is installed.

Operation

1 **Hold down the green button and slide the POWER switch to CAMERA.**

2 **Slide the STANDBY switch up.**
The camcorder enters the recording standby mode.

3 **Point the camcorder to the title card and adjust the focus.**
To focus on the title, use the macro function. (page 62).

4 **Press the TITLE 1 or TITLE 2 button.**

5 **Press the MEMORY button.**
The title is stored to the button pressed in step 4.

6 **Press the COLOR/MODE button to select the colour of the title.**
Each time you press the button, the indication changes as follows.

WHT (white) → BLUE → GRN (green) → CYAN ┐
↑ ↓
BLK (black) ← YEL (yellow) ← VIO (violet) ← RED

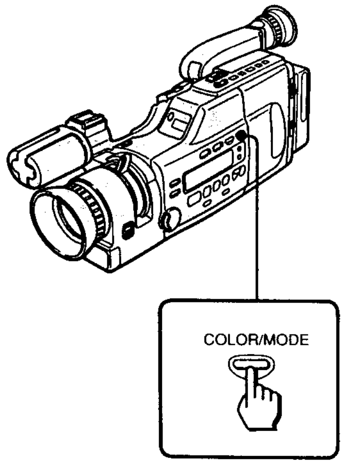
7 **Press the TITLE 1 or TITLE 2 button, whichever was pressed in step 4, to clear the title from the viewfinder.**
The title is stored to that button until you store another one over it.

To check the title
Press the TITLE 1 or TITLE 2 button, whichever was pressed in step 4, in the standby mode. To clear the title from the viewfinder, press the same button again.

To store a new title
Repeat steps 1 to 7. A new title is stored to the TITLE 1 or TITLE 2 button and the previous title will be deleted from that button.

When storing a title in the memory
When a cassette is installed, the camcorder will return to the power off mode after 5 minutes. Take out the cassette if more than 5 minutes will be needed to store the title.

(T-3)



Function of the COLOR/MODE Button

(T-3)

The COLOR/MODE button works in two ways. When a title is displayed in the viewfinder, the colour of the title can be changed. When the title is not displayed, the title display mode can be changed.

To select the colour

1 **Press the TITLE 1 or TITLE 2 button to display the title.**

2 **Press COLOR/MODE.**
Each time the button is pressed, the colour indication changes as follows.

WHT (white) → BLUE → GRN (green) → CYAN
↑ ↓
BLK (black) ← YEL (yellow) ← VIO (violet) ← RED

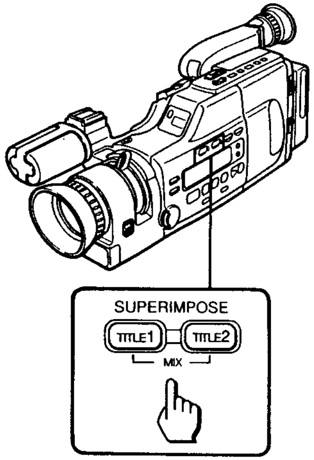
To select the display mode

1 **If the title is displayed, press TITLE 1 or TITLE 2 button to clear the title.**

2 **Press COLOR/MODE.**
Each time the button is pressed, the mode indication changes as follows.

↑: Scroll up the title.
↓: Scroll down the title.
🆃: Reverse the title.
🆃↑: Reverse the title and scroll it up.
🆃↓: Reverse the title and scroll it down.

(T-4)



Superimposing One Title

(T-4)

1 **During playback or recording, press the TITLE 1 or TITLE 2 button at the point from which you want to use the title.**
The title is displayed. During recording the title will be recorded on the tape. During playback the title will not be recorded on the tape.

2 **Press the same button pressed in step 1 at the point you wish to clear the title.**

When recording the title at the beginning
We recommend the following method:

1 **Set the camcorder in the standby mode.**

2 **Display the title by pressing the TITLE 1 or TITLE 2 button.**

3 **Release the standby mode.**

4 **Clear the title by pressing the same button as step 2.**

When recording a title onto the playback picture
The title can be superimposed on the playback picture but cannot be recorded with this camcorder alone. Make connections for editing and record the picture with title superimposed on another VTR. (See page 101).

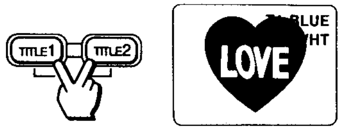
About the colour indication

- The colour indication in the viewfinder is not recorded.
- Even after the title is displayed, the colour can be changed by pressing the COLOR/MODE button.

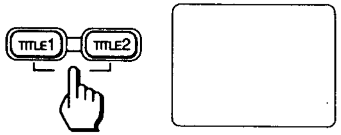
When displaying the title in the playback mode
The title is cleared if you press ◀◀ or ▶▶, and appears again when normal playback resumes.

(T-5)

1

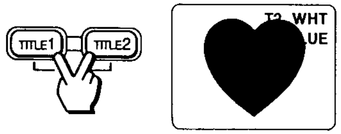


2

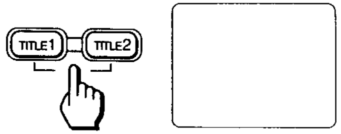


(T-6)

1



2



Layering One Title over the Other

The title stored in the TITLE 1 button and the TITLE 2 button can be displayed at the same time with one title layered on the other.

Example: When a blue heart is stored in the TITLE 1 button and a white title "LOVE" is stored in the TITLE 2 button.

To display TITLE 1 in the background and TITLE 2 in the foreground
(T-5)

1 **During playback or recording, hold down the TITLE 1 button and press the TITLE 2 button.**

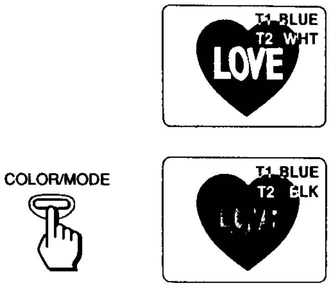
2 **Press the TITLE 1 or TITLE 2 button at the point you wish to clear the title.**

To display TITLE 2 in the background and TITLE 1 in the foreground
(T-6)

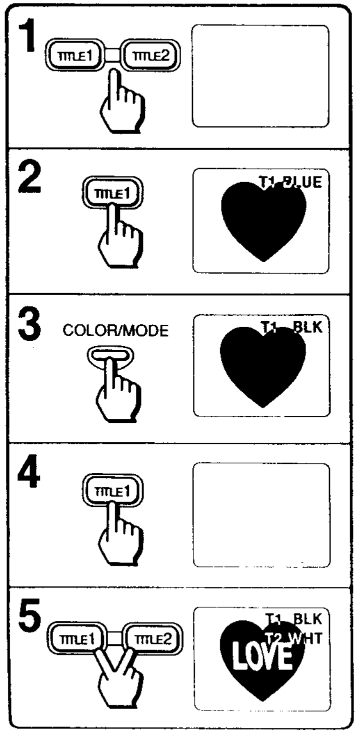
1 **During playback or recording, hold down the TITLE 2 button and press the TITLE 1 button.**
In this case, TITLE 2 "LOVE" is hidden behind TITLE 1 and is not seen. Before using this function, check whether the title stored in the memory is appropriate for this application.

2 **Press the TITLE 1 or TITLE 2 button at the point you wish to clear the title.**

(T-7)


T1 BLUE
T2 WHT
LOVE
COLOR/MODE
T1 BLUE
T2 BLK

(T-8)


1
TITLE1
TITLE2
2
TITLE1
T1 BLUE
3
COLOR/MODE
T1 BLK
4
TITLE1
5
TITLE1
TITLE2
T1 BLK
T2 WHT
LOVE

To Change the Colour of the Title after Layering One Title over the Other

Example: When a blue heart is stored in the TITLE 1 button and a white title "LOVE" is stored in the TITLE 2 button.

To change the colour of the title in the foreground
(T-7)

Press the COLOR/MODE button.
Each press of COLOR/MODE will change the colour of "LOVE".

To change the colour of the title in the background
(T-8)

1 **Press the TITLE 1 or TITLE 2 button to clear the title.**

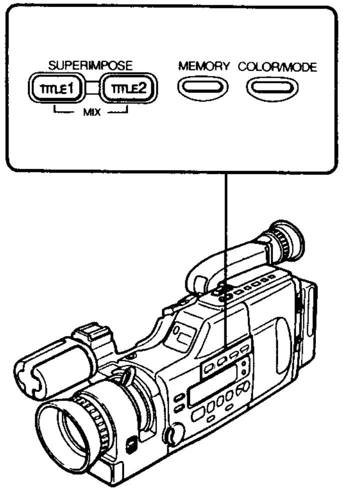
2 **Press the TITLE 1 button.**
TITLE 1, blue heart, is displayed.

3 **Press the COLOR/MODE button to change the colour of TITLE 1.**
The colour of TITLE 1, blue heart, changes.

4 **Press the TITLE 1 button.**
TITLE 1, black heart, is cleared from the picture frame.

5 **Hold down the TITLE 1 button and press the TITLE 2 button.**

(T-9)


SUPERIMPOSE
TITLE1
TITLE2
MIX
MEMORY
COLOR/MODE

Various Title Display Modes

Follow the steps below to enjoy the various title display modes.

(T-9)

Step 1
During camera recording or playback, press the COLOR/MODE button to select the title display modes. Refer to the following page for the available modes.

Step 2
Call up the title.

To display one title:
Press the TITLE 1 or TITLE 2 button.
To layer one title over the other:
Call up the title referring to page 69.

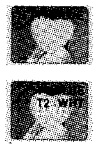
Step 3
Clear the title.

When one title is displayed:
Press the same button pressed in step 2.

When one title is layered over the other:
Press either the TITLE 1 or TITLE 2 button.

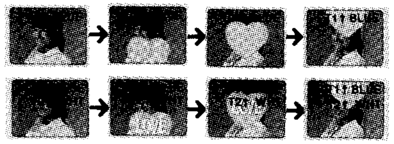
Title display modes
Each time you press the COLOR/MODE button in step 1 (page 71), the title display modes changes in the following order.

(T-10)



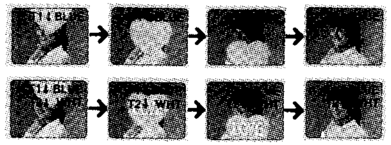
- **Normal title display (T-10)**

(T-11)



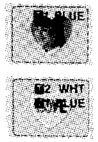
- **Scrolling up the title (T-11)**
  Step 1: The ↑ indication is displayed.
  Step 2: The title is scrolled upwards to the center and stops.
  Step 3: The title is scrolled up and out of the picture frame.

(T-12)



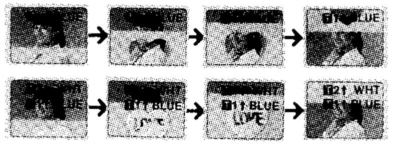
- **Scrolling down the title (T-12)**
  Step 1: The ↓ indication is displayed.
  Step 2: The title is scrolled downwards to the center and stops.
  Step 3: The title is scrolled down and out of the picture frame.

(T-13)



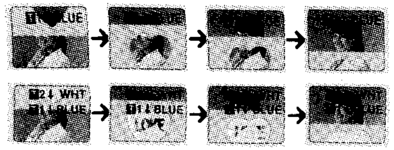
- **Reversing the title with the picture (T-13)**
  Step 1: The 🅃 indication is displayed.
  Step 2: The reversed title is displayed.
  Step 3: The title is cleared from the picture frame.

(T-14)



- **Scrolling up the reversed title (T-14)**
  Step 1: The 🅃↑ indication is displayed.
  Step 2: The reversed title is scrolled upwards to the center.
  Step 3: The reversed title is scrolled up and out of the picture frame.

(T-15)



- **Scrolling down the reversed title (T-15)**
  Step 1: The 🅃↓ indication is displayed
  Step 2: The reversed title is scrolled downwards to the center.
  Step 3: The reversed title is scrolled down and out of the picture frame.

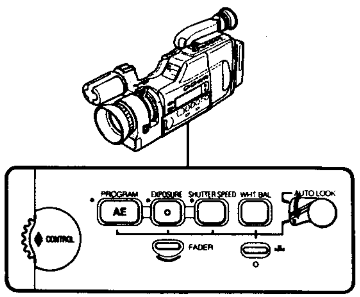
To scroll up or down through the picture frame
Press the TITLE 1 or TITLE 2 button twice successively. The title does not stop on the center, but is scrolled up or down and out of the picture frame.

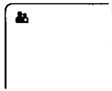
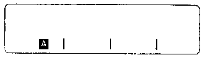
When displaying one title over the other

- TITLE 1 and TITLE 2 cannot be called up in the different title display mode at the same time. For example, calling up TITLE 1 in the reverse mode and TITLE 2 in the scroll up mode at the same is not possible.
- When scrolling the two titles layered, press the second title button before the first title starts to scroll.

Note on scrolling
You can scroll the title only when the camcorder is in the recording standby, recording, or normal playback mode. Only normal title display mode (no indication) and reverse title display mode (🅃) can be performed during modes other than the three above. (Refer to "Various Playback Modes" on page 45.) If you select the scroll mode first, and then set the camcorder to the modes other than the three above, the scroll mode will be canceled automatically.

(U-1)



Viewfinder	Display window
(U-2) 	
(U-3) 	
(U-4) Example AE A 425 ▶ F8	
(U-5) Example AE S ▶ 425 F8	
(U-6) No indication	No indication

Recording a Picture Using Programmed AE and Manual Modes

(U-1)

A variety of camera recording modes can be selected for this camcorder, from the full automatic mode to the programmed AE mode in which camera recording modes most suited for the subject and/or the condition is adjusted automatically. In addition, the manual mode enables independent setting of the exposure value and shutter speeds. Setting of a single parameter or a combination of two parameters at one time is possible.

Camera Recording Modes Available

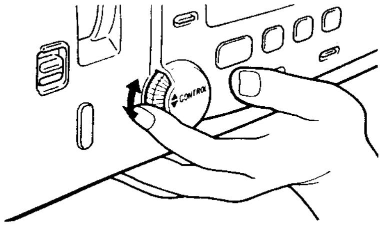
With the AUTO LOCK switch set down, each press of the PROGRAM AE button changes the camera recording mode as follows.

→ Portrait (U-2)
↓
Sports (U-3)
↓
Aperture priority (U-4)
↓
Shutter priority (U-5)
↓
Manual (U-6)

The selected parameters are displayed.

During programmed AE and manual modes
Focus and white balance can be adjusted independently from the programmed AE mode or the manual mode. Manual adjustment of focus and white balance is recommended.

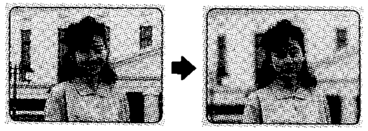
(U-7)



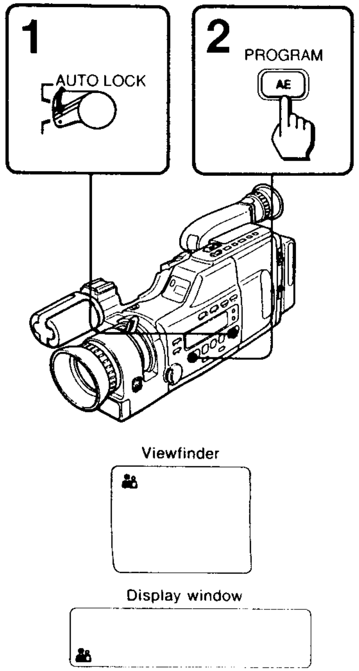
How to use the CONTROL dial (U-7)
Move the dial slowly using the tip of your index finger. If the dial is released immediately after holding it to the maximum position, the sound of the dial returning to the normal position may be recorded.

When recording in the aperture priority mode or the manual mode
Do not point the lens at the sun or other light sources when the aperture value is set to F1.4.

(V-1)



(V-2)



Portrait Mode

(V-1)

In the portrait mode, the subject is in focus and the background is out of focus. The aperture (opening of the iris) and the shutter speed is automatically adjusted to maintain the appropriate exposure according to the size and brightness of the subject. The portrait mode is most effective when used outdoors.

Portrait Mode Applications

- To shoot a subject with not much movement, such as a portrait of a person or a close up of a flower.
- To zoom in a subject with the telephoto mode.
- To shoot a subject with an obstruction in the foreground.

Operation

(V-2)

1 Set the AUTO LOCK switch down.

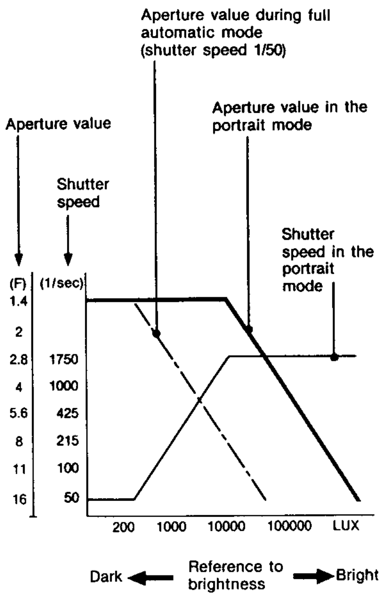
2 Press the PROGRAM AE button until the 👥 indication is displayed in the viewfinder and the display window.
The camcorder enters the portrait mode.

To return to the full automatic mode
Set the AUTO LOCK switch to AUTO LOCK.

To enter other programmed AE modes from the portrait mode
Press the PROGRAM AE button to display the desired programmed AE mode.

When recording in the portrait mode
Focus and white balance can be adjusted manually. See page 55 (focus) and page 58 (white balance) for details.

(V-3)



Hint for effective camera work
Use of the portrait mode with the following method will gradually make the background out of focus while keeping the subject in focus.

1 Enter the portrait mode referring to page 76.

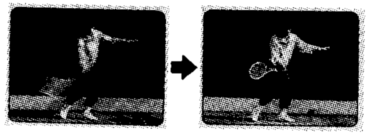
2 Set the AUTO LOCK switch to AUTO LOCK and start recording.

3 Set the AUTO LOCK switch down.
The camcorder will enter the portrait mode and make the background out of focus.

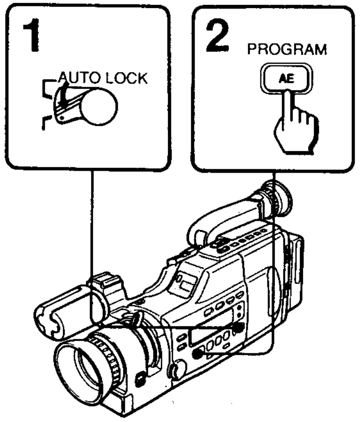
The theory of the portrait mode
(V-3)
When shooting outdoors under bright sunlight in the full automatic mode, the aperture tends to close and both the subject and the background comes into focus (deep depth of field). This is a result of excessive light. In order to bring the subject in focus and keep the background out of focus (shallow depth of field), the aperture should be opened. In the portrait mode, the aperture is controlled to open by automatically selecting the shutter speed (between 1/50 to 1/1750 that matches the shooting situation) to maintain the appropriate exposure.

When recording under fluorescent, sodium, or mercury lamps
- The brightness of the recorded picture may flicker.
- The colour of the recorded picture may vary.

(W-1)



(W-2)



Viewfinder

Display window

Sports Mode

(W-1)

By recording in the sports mode, a subject moving at high speed can be recorded and the picture can be observed more clearly with less picture shaking in the still or slow mode compared to the full automatic mode. The shutter speed and the aperture is automatically adjusted to maintain the appropriate exposure according to the speed of the subject.

Sports Mode Applications

- To shoot outdoor sports scenes, such as football, tennis, and golf.
- To shoot the scenery from inside a moving automobile.

Operation

(W-2)

1 **Set the AUTO LOCK switch down.**

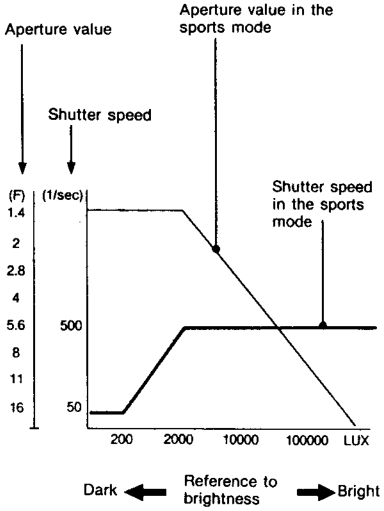
2 **Press the PROGRAM AE button until the 🏃 indication is displayed in the viewfinder and the display window.**
The camcorder enters the sports mode.

To return to the full automatic mode
Set the AUTO LOCK switch to AUTO LOCK.

To enter other programmed AE modes from the sports mode
Press the PROGRAM AE button to display the desired programmed AE mode.

When recording in the sports mode
Focus and white balance can be adjusted manually. See page 55 (focus) and page 58 (white balance) for details.

(W-3)



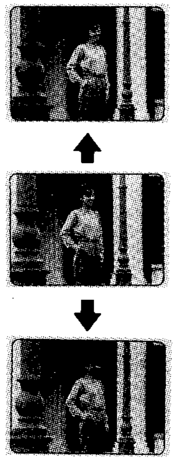
Hint for effective camera work
When shooting athletic matches from a distance, such as a football game, we tend to zoom from the wide to the telephoto position to catch the once-only events. Even under these circumstances, by using the sports mode, a sharp picture without camera wobble can be obtained when played back later in the slow or still mode.

The theory of the sports mode
(W-3)
When the shutter speed is shifted to a faster speed, subjects moving at high speed, such as a tennis racket or golf club, can be recorded and then played back clearly with less picture shaking compared to the full automatic mode. With this camcorder, the shutter speed can also be set independently from the aperture. However, the picture may become dark when the lighting condition is insufficient. In the sports mode, the fastest shutter speed that matches the shooting situation (between 1/50 and 1/500) is selected to maintain the appropriate exposure.

Note
The sports mode is effective under sufficient lighting, such as under sunlight. When used under extremely dark conditions, the shutter speed may not be shifted to high speeds.

When recording under fluorescent, sodium, or mercury lamps
- The brightness of the recorded picture may flicker.
- The colour of the recorded picture may vary.

(X-1)



Aperture Priority Mode

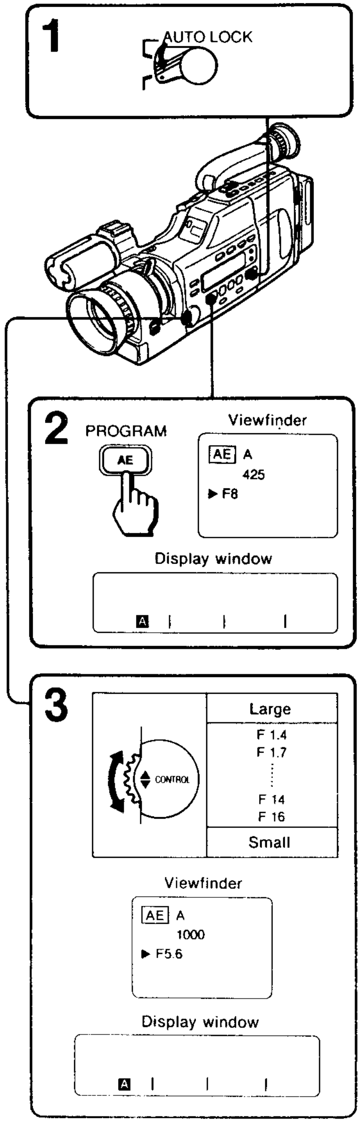
(X-1)

The aperture priority mode enables to select the aperture which determines the depth of field. 15 aperture values, from F 1.4 to F16, can be selected. The shutter speed is automatically set (between 1/50 to 1/1750) in combination with the aperture value to maintain the appropriate exposure.

Aperture Priority Application

To shoot the picture with different depths of field.

(X-2)


1
AUTO LOCK
2
PROGRAM
AE
Viewfinder
AE A
425
▶ F8
Display window
A
3
CONTROL
Large
F 1.4
F 1.7
F 14
F 16
Small
Viewfinder
AE A
1000
▶ F5.6
Display window
A

Operation

(X-2)

1 **Set the AUTO LOCK switch down.**

2 **Press the PROGRAM AE button until the AE A indication is displayed in the viewfinder and A in the display window.**
The camcorder enters the aperture priority mode.

3 **Move the CONTROL dial to set to the desired aperture value.**
The selectable aperture values are:
F1.4, F1.7, F2, F2.4, F2.8, F3.4, F4, F4.8, F5.6, F6.8, F8, F9.6, F11, F14, F16

The shutter speed indication corresponds to the change of the aperture value.

To return to the full automatic mode
Set the AUTO LOCK switch to AUTO LOCK.

To enter other programmed AE modes from the aperture priority mode
Press the PROGRAM AE button to display the desired programmed AE mode.

When recording in the aperture priority mode
Focus and white balance can be adjusted manually.
See page 55 (focus) and page 58 (white balance) for details.

Hints for effective camera work

- **Understanding the depth of field**

The depth of field is the area in which the objects are in focus. A shallow depth of field shows the subject in focus and the background out of focus. The greatest depth of field shows everything in focus.

- **Depth of field and aperture value**

A large aperture provides a shallow depth of field and a small aperture provides a deep depth of field.

- **Depth of field and object-to-camera distance**

When the object-to-camera distance is near, the depth of field will be shallow. When the object-to-camera distance is far, the depth of field will be great.

- **Depth of field and zooming**

The depth of field will be shallow in the telephoto position. The depth of field will be great in the wide position.

- **Summary**

	A shallow depth-of-field	A deep depth-of-field
Aperture	Towards open	Towards closed
Object-to-camera distance	Near	Far
Zoom	Telephoto	Wide

When the ▶ indication in the viewfinder is blinking

The lighting condition is insufficient or excessive for the aperture priority mode. In this case, move the CONTROL dial and readjust the aperture.

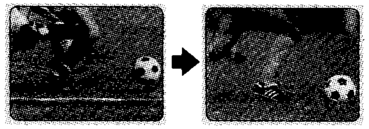
- **Insufficient light (when the picture inside the viewfinder is dark)**
  Change the aperture towards F1.4.
- **Excessive light (when the picture inside the viewfinder is too bright)**
  Change the aperture towards F16.

Although we recommend camera recording without the ▶ indication blinking, camera recording can be performed even when the ▶ indication is blinking. Check the picture in the viewfinder before recording.

When recording under fluorescent, sodium, or mercury lamps

- The brightness of the recorded picture may flicker.
- The colour of the recorded picture may vary.

(Y-1)



Shutter Priority Mode

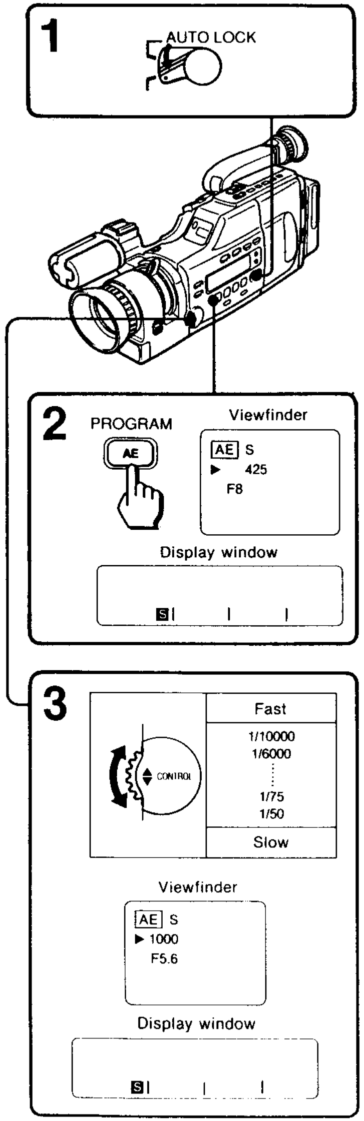
(Y-1)

The shutter priority mode enables selection of the shutter speed. 16 shutter speeds can be selected from 1/50 (normal speed) to 1/10000. When a fast shutter speed is selected, subjects moving at high speed can be recorded and the picture can be observed more clearly with less picture shaking in the still or slow modes compared to slower shutter speeds. The aperture value is automatically set (between F1.4 to F16) in combination with the shutter speed to maintain the appropriate exposure.

Shutter Priority Applications

- To shoot a golf swing or a tennis match with the tennis ball captured clearly.
- When you wish playback certain scenes with high speed movements in a clear, sharp picture.

(Y-2)


1
AUTO LOCK
2
PROGRAM
AE
Viewfinder
AE S
▶ 425
F8
Display window
S
3
CONTROL
Fast
1/10000
1/6000
1/75
1/50
Slow
Viewfinder
AE S
▶ 1000
F5.6
Display window
S

Operation

(Y-2)

1 **Set the AUTO LOCK switch down.**

2 **Press the PROGRAM AE button until the AE S indication is displayed in the viewfinder and S in the display window.**
The camcorder enters the shutter priority mode.

3 **Move the CONTROL dial to set to the desired shutter speed.**
The selectable shutter speeds are:
1/50, 1/75, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1000, 1/1250, 1/1750, 1/2500, 1/3500, 1/6000, 1/10000

The aperture value indication corresponds to the change of the shutter speed.

To return to the full automatic mode
Set the AUTO LOCK switch to AUTO LOCK.

To enter other programmed AE modes from the shutter priority mode
Press the PROGRAM AE button to display the desired programmed AE mode.

When recording in the shutter priority mode
Focus and white balance can be adjusted manually. See page 55 (focus) and page 58 (white balance) for details.

Hints for effective camera work
Refer to the chart below for the appropriate shutter speed for the object. Check the brightness of the picture in the viewfinder.

When to use	Recommended speed
• On clear days, recording golf or tennis scenes. (To view the hit ball clearly in the slow or still mode, select shutter speeds between 1/1000 to 1/4000) • Recording the skiers.	1/10000 to 1/600
• On overcast days, recording a moving merry-go-round or a roller coaster. • Recording outdoors stably from inside a moving automobile. • General athletic scenes, marathon, etc.	1/425 to 1/150
• Used in place of the ND2 filter to reduce the exposure to approximately 1/2. • Recording indoors for stable recording.	1/120
• Recording under bright sunlight. To avoid out-of-focus pictures while recording with small aperture.	1/100 to 1/75

When the ▶ indication in the viewfinder is blinking
The lighting condition is insufficient or excessive for the shutter priority mode. In this case, move the CONTROL dial and readjust the shutter speed.

Although we recommend camera recording without the ▶ indication blinking, camera recording can be performed even if the ▶ indication is blinking.
In this case, check the picture in the viewfinder before recording.

When is shutter speed 1/50 indicated?
1/50 indication is displayed only when the shutter speed is set to 1/50 using the CONTROL dial. Even though the shutter speed is set to 1/50 during the full automatic mode, the indication will not be displayed.

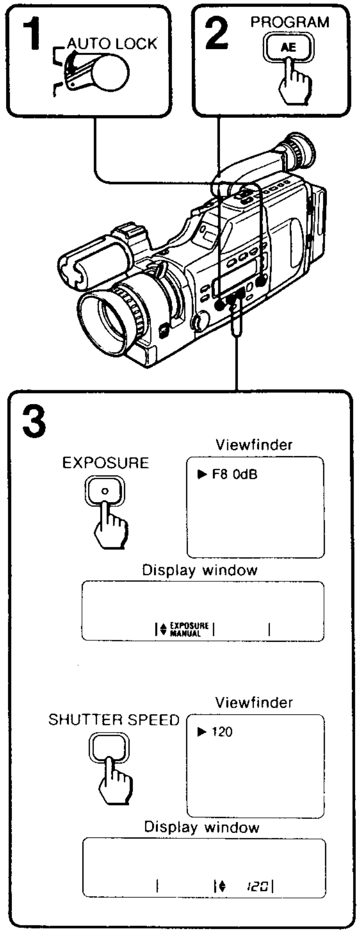
When the shutter speed is set 1/215 or faster
Try to shoot under sunlight outdoors, and with the video light indoors.

When shooting a very bright object
A vertical band (smear) may appear on the screen if shot at high speeds.

When the shutter speed is changed when shooting a TV screen
The brightness of the recorded picture may vary.

When recording under fluorescent, sodium, or mercury lamps
- The brightness of the recorded picture may flicker.
- The colour of the recorded picture may vary.

(Z-1)


1
AUTO LOCK
2
PROGRAM
AE
3
EXPOSURE
Viewfinder
▶ F8 0dB
Display window
EXPOSURE MANUAL
SHUTTER SPEED
Viewfinder
▶ 120
Display window
120

Manual Mode

In the manual mode, independent setting of the exposure (aperture value/gain level) and shutter speeds can be performed. Setting of a single parameter or a combination of two parameters at one time is possible.

Setting One Parameter

(Z-1)

1 **Set the AUTO LOCK switch down.**

2 **Press the PROGRAM AE button until nothing is indicated in the upper left hand corner of the viewfinder.**
The camcorder enters the manual mode.

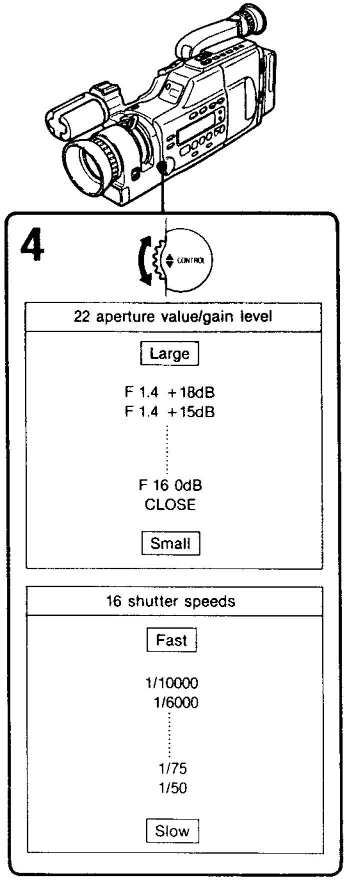
At this point, the shutter speed is set to 1/50, the exposure (aperture/gain) are automatically adjusted to the shooting condition.

3 **Press the button of the parameter to be set.**

To set the exposure (aperture/gain) value
Press the EXPOSURE button. The exposure (aperture/gain) is set to the value at the instant the button was pressed.

To set the shutter speed
The first press of the SHUTTER SPEED button sets the shutter speed to 1/120 speed and the second press sets it to 1/1000. To set to other speeds, go to step 4.

Continued on the next page


4
CONTROL
22 aperture value/gain level
Large
F 1.4 +18dB
F 1.4 +15dB
F 16 0dB
CLOSE
Small
16 shutter speeds
Fast
1/10000
1/6000
1/75
1/50
Slow

4 **Select the desired setting by the CONTROL dial.**

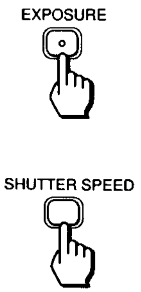
The indication in the viewfinder changes as shown in the illustration and below.

Selectable aperture value/gain level
F1.4/+18dB, F1.4/+15dB, F1.4/+12dB, F1.4/+9dB, F1.4/+6dB, F1.4/+3dB, F1.4/0dB, F1.7/0dB, F2/0dB, F2.4/0dB, F2.8/0dB, F3.4/0dB, F4/0dB, F4.8/0dB, F5.6/0dB, F6.8/0dB, F8/0dB, F9.6/0dB, F11/0dB, F14/0dB, F16/0dB, CLOSE

Selectable shutter speeds
1/50, 1/75, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1000, 1/1250, 1/1750, 1/2500, 1/3500, 1/6000, 1/10000

Note on the exposure indication
When recording indoors, the exposure indication may be F2 +3dB. This indicates that the gain level has increased while the aperture value is not F1.4 (open). This adjustment can only be made in the automatic mode. You cannot make such an adjustment in the manual mode.

(Z-2)



To return to the full automatic mode
Set the AUTO LOCK switch to AUTO LOCK.

To enter other programmed AE modes from the manual mode
Press the PROGRAM AE button to display the desired programmed AE mode.

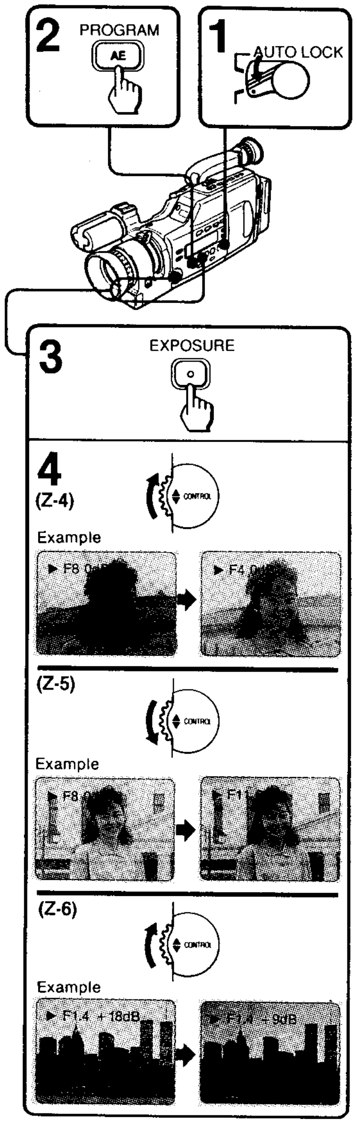
When recording in the manual mode
Focus and white balance can be adjusted manually. See page 55 (focus) and page 58 (white balance) for details

The buttons pressed and the indication in the viewfinder
(Z-2)

- **When the EXPOSURE button is pressed**
The camcorder indicates the aperture value/gain level that was last detected when the camcorder was controlling the exposure automatically. At the same moment, the exposure is locked to the indicated level.

- **When the SHUTTER SPEED button is pressed**
The first press of this button sets the camcorder to the 1/120 shutter speed. The second press sets the camcorder to the 1/1000 shutter speed. For a quick access to the desired shutter speed, first press the button and set to the shutter speed whichever is closer to the desired speed and then turn the CONTROL dial.

(Z-3)



Exposure Control Applications

(Z-3)

Adjust the exposure when there is an extreme difference in the brightness between the subject and the background.
This camcorder automatically raises the gain level to capture the subject clearly when the shooting condition is dark. Due to this function, the recorded picture may seem brighter than the actual shooting condition. In these cases, set the gain level to reproduce the actual atmosphere.

1 **Set the AUTO LOCK switch down.**

2 **Press the PROGRAM AE button until nothing is indicated in the upper left hand corner of the viewfinder.**
The camcorder enters the manual mode.

At this point, the shutter speed is set to 1/50, the aperture and gain are automatically adjusted to the shooting condition.

3 **Press the EXPOSURE button.**

4 **Move the CONTROL dial to set the aperture/gain to the appropriate value.**

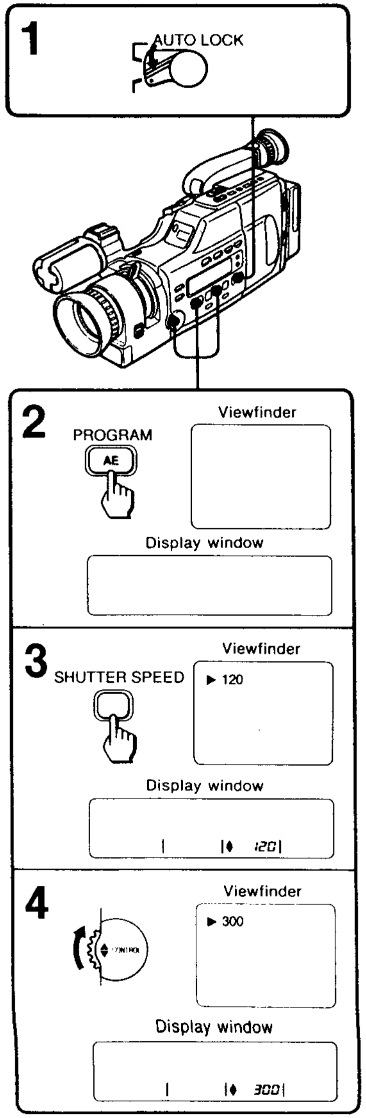
Illumination from behind the subject and opposite the camera (Back light)
(Z-4)
Move the CONTROL dial up to decrease the aperture value.

Illumination too strong
(Z-5)
Move the CONTROL dial down to increase the aperture value.

Shooting the picture in the dark effectively
(Z-6)
Move the CONTROL dial down to lower the gain level.

When the gain level is too high
The picture may become distorted.

(Z-7)


1
AUTO LOCK
2
PROGRAM
AE
Viewfinder
Display window
3
SHUTTER SPEED
Viewfinder
▶ 120
Display window
| |♦ 120|
4
CONTROL
Viewfinder
▶ 300
Display window
| |♦ 300|

Setting Multiple Parameters

(Z-7)

Example: To set the shutter speed to 1/250, aperture value to F4 0dB.

1 Set the AUTO LOCK switch down.

2 Press the PROGRAM AE button until nothing is indicated in the upper left hand corner of the viewfinder.
The camcorder enters the manual mode.

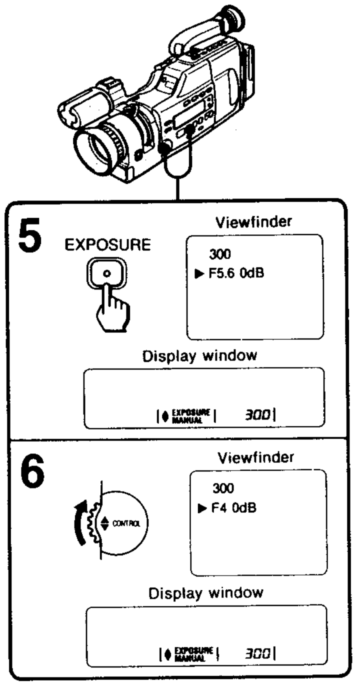
At this point, the shutter speed is set to 1/50, the aperture and gain are automatically adjusted to the shooting condition.

3 Press the SHUTTER SPEED button.

4 Move the CONTROL dial and set the shutter speed to 300.

To set the shutter speed only, the setting is completed here.

Continued on the next page


5
EXPOSURE
Viewfinder
300
▶ F5.6 0dB
Display window
|♦ EXPOSURE MANUAL | 300|
6
CONTROL
Viewfinder
300
▶ F4 0dB
Display window
|♦ EXPOSURE MANUAL | 300|

5 Press the EXPOSURE button.

6 Move the CONTROL dial and set the aperture value to F4 0dB.

Camera recording will be performed under this setting even when the shooting condition changes.

To return to the full automatic mode
Set the AUTO LOCK switch to AUTO LOCK.

Which parameter to be set first
Setting can be performed from either parameter. Press the button of the desired parameter. The indication when the button is pressed is the same as those explained in page 90.

(Z-8)

Parameter	Indications in the Viewfinder (setting examples)
SHUTTER SPEED	▶ 300 ➡
	▶ 300 F4 0dB ➡ ▶ F4 0dB
EXPOSURE	▶ F1.4 0dB ➡
	600 ▶ F1.4 0dB ➡ ▶ 600

To change the setting

- **Parameter with the ▶ indication:**
  Move the CONTROL dial to change the setting.

- **Parameter without the ▶ indication:**

1 **Press the button of the desired parameter to move the ▶ indication to that parameter.**

2 **Then move the CONTROL dial to change the setting.**

To quit the setting
(Z-8)
Parameter with the ▶ indication:
Press the button of that parameter to erase the indication from the viewfinder.

Parameter without the ▶ indication:

1 **Press the button of the parameter to be erased to move the ▶ indication to that parameter.**

2 **Then press the same button to erase that parameter from the viewfinder.**

When the parameter is erased
The adjustment of that parameter will be as follows.

- Shutter speed: Locked to 1/50.
- Aperture value/gain level: Automatic adjustment

(Z-9)

	Exposure		Shutter speed
	Aperture value	Gain level	
Selectable steps	15 steps	7 steps	16 steps
Variation of exposure (in terms of EV steps)	0.5 EV steps	0.5 EV steps	0.5 EV steps
Towards bright (+ EV) ↕ Towards dark (− EV)	F1.4 ↕ F16	+18 dB ↕ 0 dB	1/50 ↕ 1/10000

Advanced Application of the Manual Mode

The manual adjustment function offers an advanced video camera recording technique by controlling the exposure with the balance of shutter speed, aperture value and gain level.

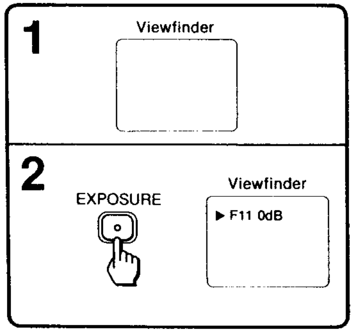
Understanding the relation between aperture value, shutter speed, and gain
Exposure is measured in the units of Exposure value (EV). In this camcorder, the total EV can be varied or kept at a constant level by controlling the balance of the parameters.

Refer to the chart on the left **(Z-9)** for an overview of the relation between aperture value, gain level, and shutter speed of this camcorder.

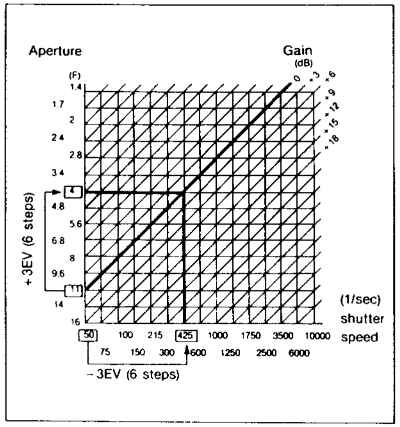
The relation between exposure and the aperture, gain, and shutter speed can be concluded as:

EV (Exposure value) = Exposure (aperture/gain) control + Shutter speed control

(Z-10)



(Z-11)



Example: To change the setting without changing the exposure
(Z-10)

1 **Set the camcorder to the manual mode referring to page 92.**

2 **Press the EXPOSURE button.**

The setting at this point becomes the basic reference to perform the following setting.

Let's set the exposure at this point at 0 EV.

0 EV = Exposure (aperture/gain) control + Shutter speed control

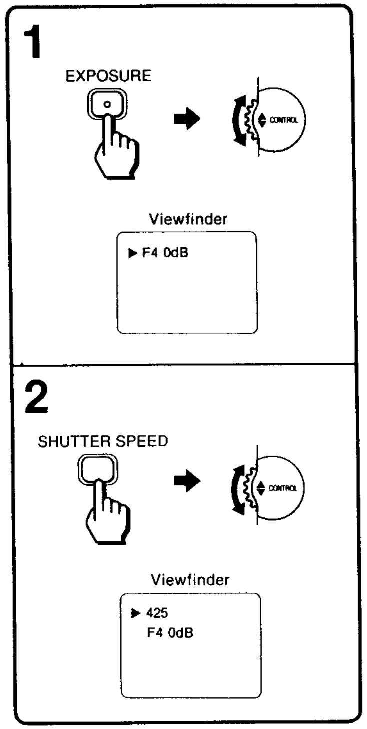
In order to maintain the same exposure, the total exposure should be kept to 0 EV in any case.

3 **Refer to the diagram (Z-11) to choose the setting.**
The diagram shows the relation between aperture, gain, and shutter speed.

Setting in step 2 (on page 97)
Aperture value: F11
Gain level: 0dB
Shutter speed: 1/50

Vertical axis: Aperture value in 0.5EV/step
Diagonal axis: Gain level in 0.5 EV/step
Horizontal axis: Shutter speed in 0.5EV/step

(Z-12)



To set the aperture to F4 without changing the exposure
(Z-12)

1 **Press the EXPOSURE button and move the CONTROL dial to set the aperture to F4.**
When shifting the aperture from F11 to F4, the exposure becomes 6 steps brighter. This means that in terms of EV, the total exposure becomes +3 EV. In order to keep the total exposure to 0 EV, reduce the exposure by 3 EV with shutter speed.

2 **How it works:**
What is required here is to reduce the exposure by 3 EV, i.e. 6 steps, by shifting the shutter speed from 1/50 to 1/425.
Operation:
Press the SHUTTER SPEED button and move the CONTROL dial to set the shutter speed to 1/425.

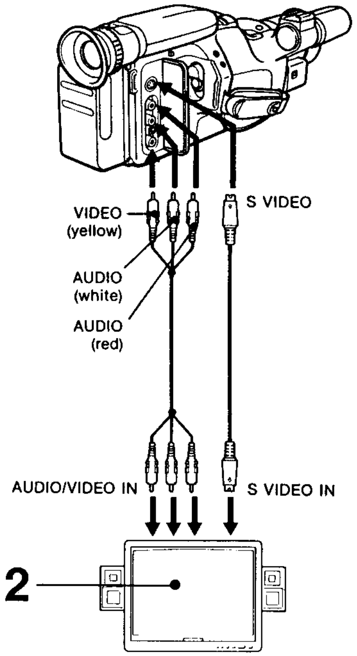
	Aperture control		Shutter speed control
0 EV =	F11 to F4	+	1/50 to 1/425
	+3 EV		-3 EV

Conclusion
To change the setting while having the same total exposure, change the exposure (aperture/gain) and shutter speed by the same numbers of steps.
Example 1: When you increase the exposure (aperture/gain) by 6 steps, increase the shutter speed by 6 steps.
Example 2: When you reduce the exposure (aperture/gain) by 3 steps, slow down the shutter speed by 3 steps.

Hint for effective camera work
Gain can be used in terms of film sensitivity of a still camera.

Notes
- When shooting outdoors, the brightness of the object may change due to the change of weather.
- When the shooting condition changes, resetting of the parameters is recommended.

(AA-1)


VIDEO
(yellow)
AUDIO
(white)
AUDIO
(red)
S VIDEO
AUDIO/VIDEO IN
S VIDEO IN
2

Custom Preset Function

The camcorder can be preset to record the picture with the desired colour and hue. Adjust the camera, if necessary, after making several trial recordings.

Connections

(AA-1)

When using the custom preset function, adjust the picture by shooting a subject and checking the picture on a TV or a monitor.

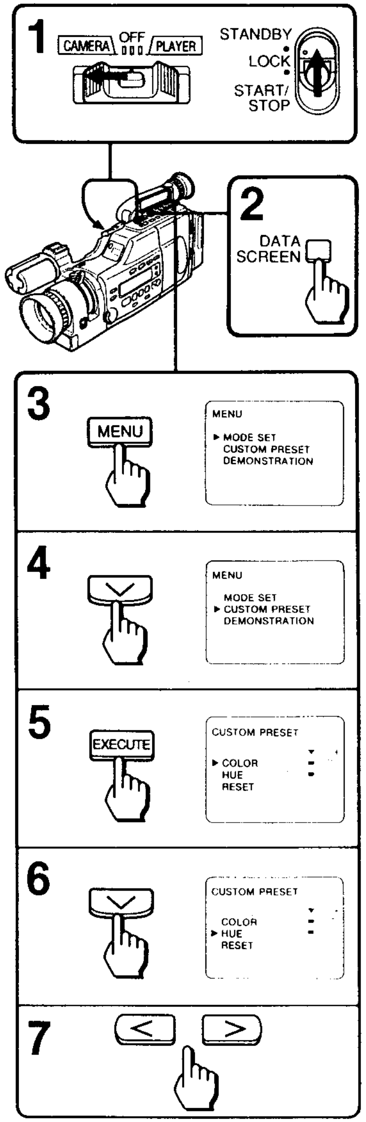
1 **Connect the camcorder and the TV or monitor referring to the illustration.**

2 **Set the TV/VIDEO selector on the TV or monitor to VIDEO.**

Understanding the setting in the CUSTOM PRESET menu
The custom preset function is effective only when the tape recorded in the CUSTOM PRESET mode is viewed on the TV or monitor that was connected to the camcorder at the time of the setting.
Therefore, the tape may not reproduce the picture in the expected colour or hue, when played back on a different TV or monitor.

Note
For details on the TV, refer to the operating instructions of the TV.

(AA-2)


1
CAMERA
OFF
PLAYER
STANDBY
LOCK
START/
STOP
2
DATA
SCREEN
3
MENU
MENU
▸ MODE SET
CUSTOM PRESET
DEMONSTRATION
4
MENU
MODE SET
▸ CUSTOM PRESET
DEMONSTRATION
5
EXECUTE
CUSTOM PRESET
▸ COLOR
HUE
RESET
6
CUSTOM PRESET
COLOR
▸ HUE
RESET
7

Operation

(AA-2)

1 **Set the POWER switch to CAMERA and slide the STANDBY switch up.**
The camcorder enters the recording standby mode.
In order to adjust the picture precisely, adjust the focus and white balance manually.

2 **Press DATA SCREEN to display the CUSTOM PRESET menu indication in the viewfinder on the TV or monitor screen.**

3 **Press MENU.**

4 **Press ∨ and move cursor to CUSTOM PRESET.**

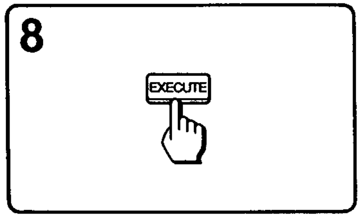
5 **Press EXECUTE.**
The CUSTOM PRESET menu is displayed.

6 **Press ∨ and move cursor to the item to be adjusted.**
Each press of ∨ moves the cursor to the item below. When the cursor is at RESET, press ∨ again to move the cursor to COLOR.

7 **Press < or > to adjust the picture shot by the camera by monitoring it on the TV or monitor screen.**
Three steps each from the standard position can be selected.

Parameter	Function	← – ▼ + →
COLOR	To adjust the colour intensity	Lighter Stronger
HUE	To adjust the hue	Purplish Greenish

Continued on the next page



8 Check the cursor is not set to RESET and press EXECUTE.
The CUSTOM PRESET menu is cleared and the new setting is stored in the memory.

To record in the setting made in the CUSTOM PRESET menu

1 Set the camcorder in the recording pause mode.

2 Call up the MODE SET menu referring to page 52.

3 Select "CUSTOM MODE ON".

4 Press EXECUTE.

5 Set the AUTO LOCK switch down.
The CP (custom preset mode) indication is displayed in the viewfinder.

6 Press START/STOP to start recording.

After recording
Reset the AUTO LOCK switch to AUTO LOCK. The CP indication disappears, but the settings of the parameters remain.

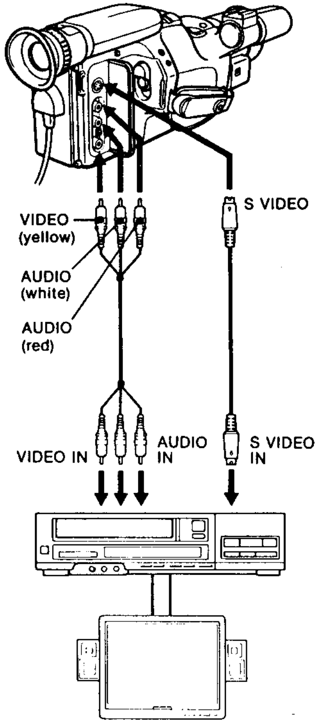
To return to the standard setting
Set cursor to RESET in step 6 of "Operation" (page 99) and press EXECUTE.
The CUSTOM PRESET menu is cleared. All of the parameters will be at the standard position the next time it is called up.

Note
The effect of the CUSTOM PRESET function may not be apparent depending upon the brightness, pattern, and colour of the subject.

Editing onto Another VTR

You can create your own video programme by editing with any other 8 mm 8, Betamax B, or VHS VHS format VTR.

(BB)



Before You Begin

(BB)

- Make connections using the supplied A/V connecting cable for stereo equipment.
  For monaural equipment, connect only the white plug for audio and select "HIFI SOUND 1" in the menu. See "Selecting the Monitor Sound" on page 48.
- Use of the supplied AC power adaptor is recommended.
- Select "EDIT ON" in the MODE SET menu. See page 50.
- Press DATA SCREEN to clear the indication from the viewfinder. Otherwise, the indication will be recorded together with the picture on the recording VTR.
- Set the input selector of the VTR to LINE, if available.

Operation

1 Insert a tape for recording into the recording VTR.

2 Set the POWER switch on the camcorder to PLAYER and insert a source tape.

3 Playback the tape on the camcorder and locate the editing start point. Then set the camcorder to the playback pause mode.

4 Playback the tape on the recording VTR and locate the recording start point. Then set the VTR to the recording pause mode.

5 Release the pause mode on both VTRs.
Editing starts.

To stop editing momentarily
Press II on the recording VTR.

To edit more scenes
Repeat steps 3 to 5.

To stop editing
Press □ on both VTR.

To record a title
Use the camcorder as a player. Playback the tape and call up the title in the desired mode. The played back picture will be recorded on the recording VTR with the title superimposed. For details on the title, refer to pages 64 to 73.

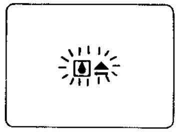
Note on edit function
When using the camcorder as the playback VTR, selecting the "EDIT ON" in the MODE SET menu activates the edit function. Picture deterioration resulting from editing can be kept to the minimum. However, avoid using the edited tape for multiple generations of editing.
Deactivate the edit function when not editing.

Notes and Precautions

Notes on Moisture Condensation

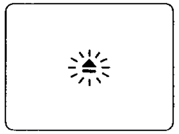
If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface or the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors.
However, take the following precautions.

(CC-1)



If moisture condenses inside the unit
(CC-1)
Moisture is present inside the camcorder when the 💧 and ⏏ indications in the viewfinder blink. In this case, no function except for tape ejection will work.
Eject the tape, turn off the camcorder, and leave it with the cassette holder open for at least 1 hour.
The camcorder can be used again if the 💧 and ⏏ indications do not appear when the power is turned on again. (⏏ indication appears only when a tape is inserted.)

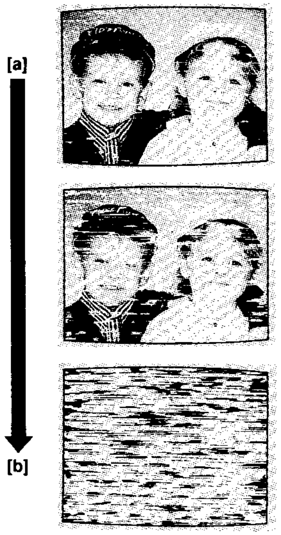
(CC-2)



If moisture condenses on the surface of the tape
(CC-2)
If moisture is present on the surface of the tape when the tape is inserted and a tape transport button (▷, ◀◀, etc.) is pressed, the ⏏ indication blinks inside the viewfinder.
In such case, no function except for tape ejection will work.
Eject the tape and let it sit for at least 1 hour.
The tape can be used again if the ⏏ indication does not appear when the tape is inserted and a tape transport button is pressed.

If moisture condenses on the lens
No caution indications will appear, but the picture becomes dim.
Turn off the power and leave the camcorder unused for at least 1 hour.

(EE-3)



Notes on Video Head Cleaning

To ensure clear picture, clean the video heads periodically.
When playback pictures are noisy or hardly visible, the video heads may be contaminated.

(CC-3)
[a] Slight contamination
[b] Critical contamination
In such cases,

1. **Clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied), referring to its instrucions.**
2. **After cleaning, check if the picture is clear by recording or playing back with an ordinary tape.**
3. **If the picture is still noisy, repeat cleaning. (Do not repeat cleaning more than 5 times.)**

Caution
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

Precautions

On operation

- Operate the camcorder on 6.0 V (battery pack), 7.5 V (AC power adaptor), or 9.0 V (alkaline batteries).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by qualified personnel before operating it any further.
- Do not hold the camcorder by the viewfinder or the microphone.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the lens cap on the lens when not using the camera.
- Do not wrap the camcorder and operate it because heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- **Do not let sand get into the camcorder**
  When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired.
- **Do not let the camcorder get wet**
  Keep the camcorder from rain or sea water. It may cause malfunction and sometimes the malfunction cannot be repaired.

On care

- When the unit will not be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera section and player section and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, wipe them off with a soft cloth.
  Clean the camcorder body with a dry, soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

Note on copyright
Televison programmes, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Using Your Camcorder Abroad

Each country has its own electricity system and TV colour system. Before using your camcorder abroad, check the following points.

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 110 V to 240 V AC, 50/60Hz.

Difference in Colour Systems

You can view the playback picture in the viewfinder. However, if you want to view the playback picture on a TV, it must be an appropriate PAL system-based TV.
There is no compatibility among PAL, PAL-M and PAL-N systems.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany (former West Germany), Great Britain, Holland, Hong Kong, Italy, Kuwait, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

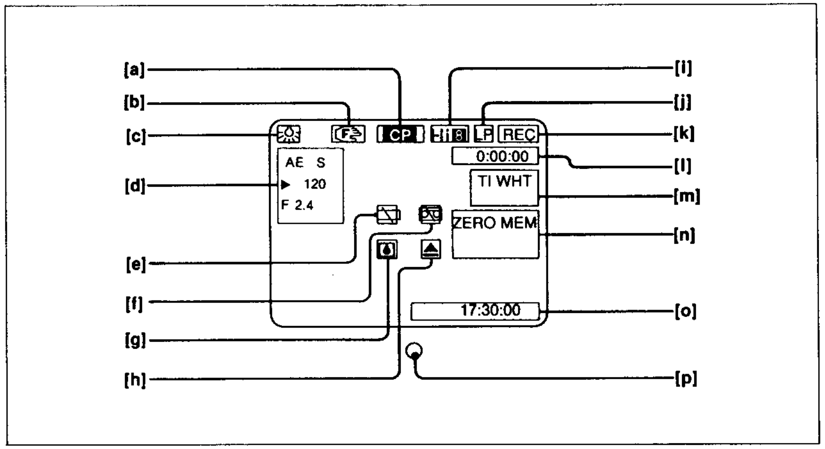
NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, The Philippines, U.S.A., Venezuela, etc.

SECAM system countries
Bulgaria, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, Soviet Union, etc.

Indications in the Viewfinder and the Display Window

Indications in the Viewfinder

(DD-1)


[a]
[b]
[c]
[d]
[e]
[f]
[g]
[h]
AE S
▶ 120
F 2.4
CP
Hi8
LP
REC
0:00:00
TI WHT
ZERO MEM
17:30:00
[i]
[j]
[k]
[l]
[m]
[n]
[o]
[p]

(DD-1)

[a] Custom preset mode indication

[b] Manual focus mode indication

[c] White balance mode indication

[d] Fader, programmed AE, and manual mode indications

[e] Battery indication

[f] Tape indication

[g] Moisture condensation indication

[h] Head clog and caution indication

[i] Hi8 mode indication

[j] Tape speed (SP/LP) indication

[k] Tape operation mode, camera operation mode indication

[l] Tape counter indication

[m] Title number, colour, and mode indication

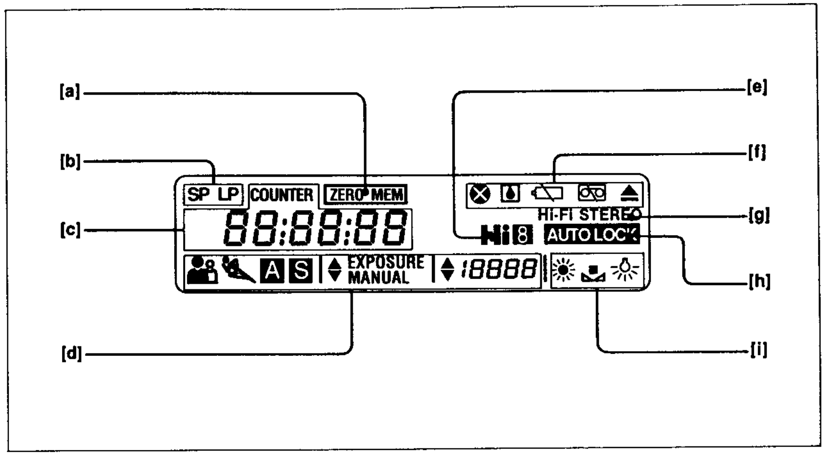
[n] Zero memory mode indication

[o] Date and time

[p] Camera recording lamp

Indications in the Display Window

(DD-2)


[a]
[b]
[c]
[d]
SP LP
COUNTER
ZERO MEM
88:88:88
HI-FI STEREO
Hi8
AUTO LOCK
A
S
EXPOSURE
MANUAL
18888
[e]
[f]
[g]
[h]
[i]

(DD-2)

[a] Zero memory mode indication

[b] Tape speed indication

[c] Time, date, and tape counter indication

[d] Programmed AE and manual mode indications

[e] Hi8 mode indication

[f] Caution indications

[g] Hi-Fi stereo mode indication

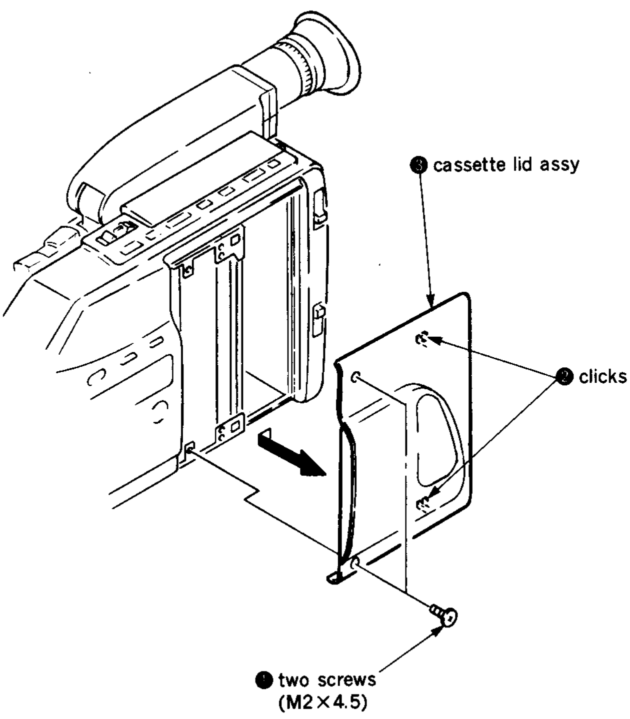
[h] Auto-lock indication
Appears in the automatic adjusting mode.

[i] White balance mode indications

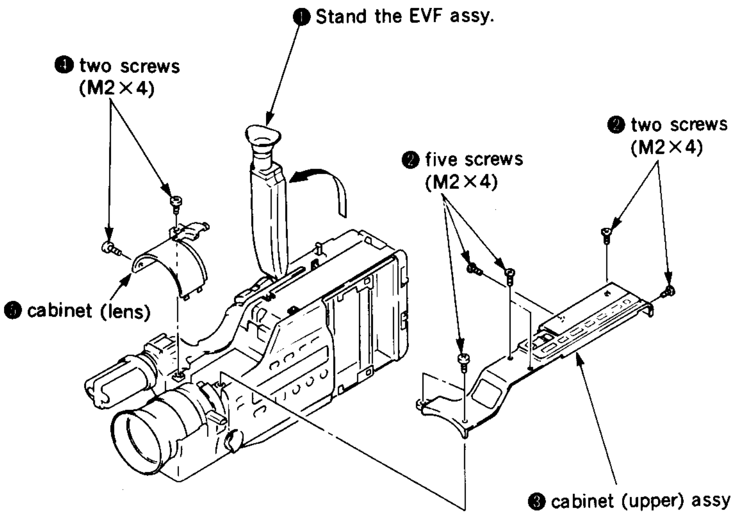
SECTION 2
DISASSEMBLY

2-1. REMOVAL OF CASSETTE LID ASSY

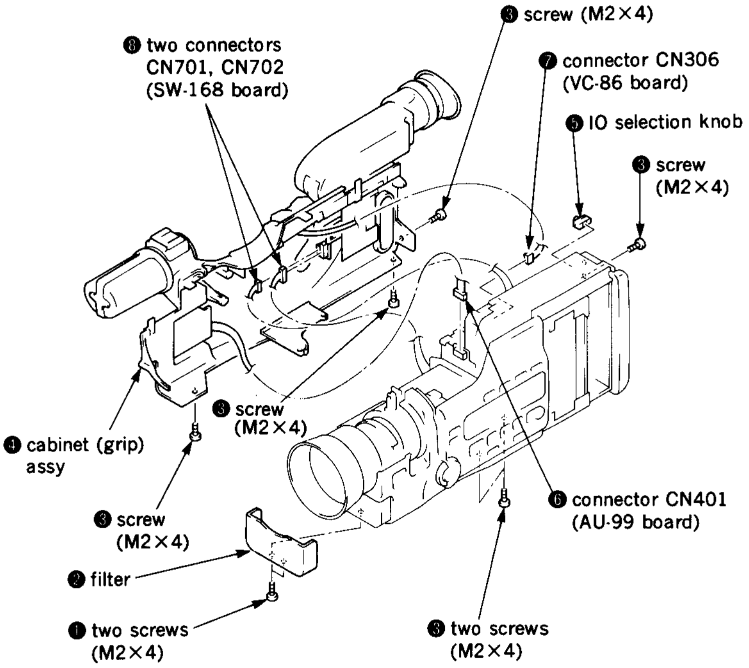
Note: When mounting, fit the clicks ❷ into holes completely, then clamp two screws ❶.


❸ cassette lid assy
❷ clicks
❶ two screws (M2×4.5)

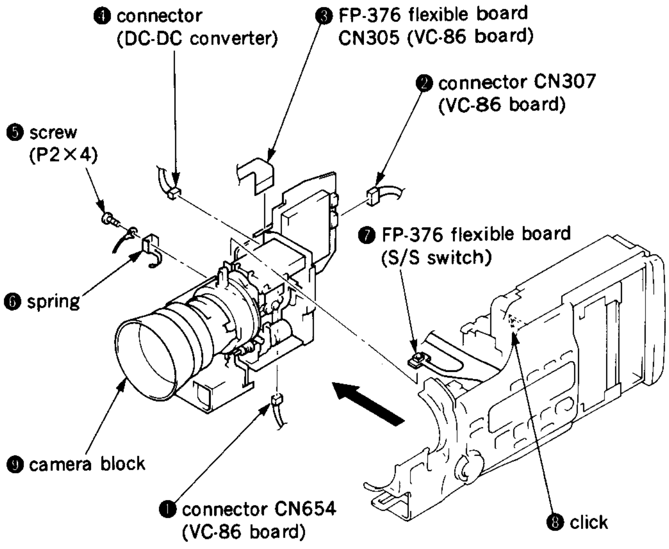
2-2. REMOVAL OF CABINET (UPPER, LENS) ASSY


❶ Stand the EVF assy.
❹ two screws (M2×4)
❷ two screws (M2×4)
❷ five screws (M2×4)
❺ cabinet (lens)
❸ cabinet (upper) assy

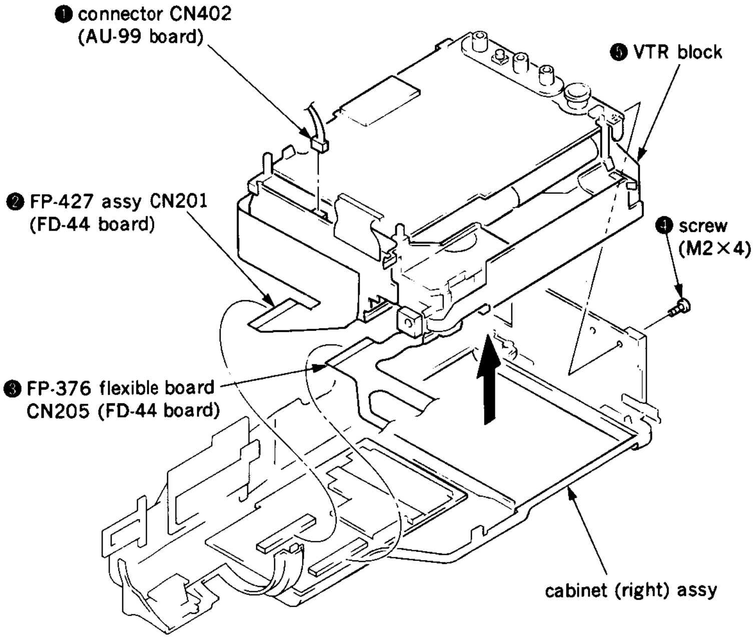
2-3. REMOVAL OF CABINET (GRIP) ASSY


❸ screw (M2×4)
❽ two connectors CN701, CN702 (SW-168 board)
❼ connector CN306 (VC-86 board)
❺ IO selection knob
❸ screw (M2×4)
❸ screw (M2×4)
❹ cabinet (grip) assy
❸ screw (M2×4)
❻ connector CN401 (AU-99 board)
❷ filter
❶ two screws (M2×4)
❸ two screws (M2×4)

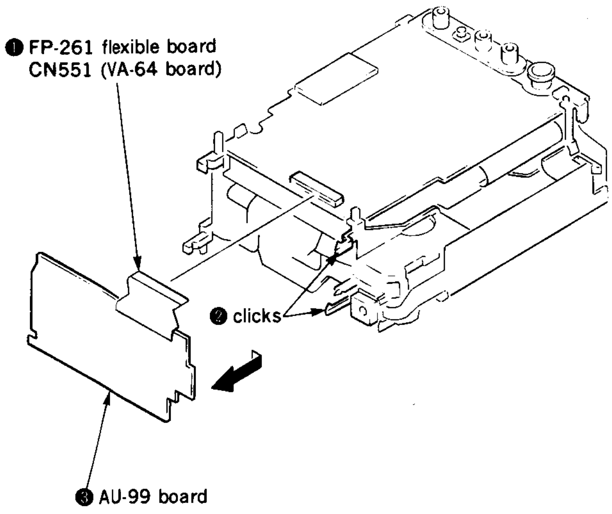
2-4. REMOVAL OF CAMERA BLOCK


❹ connector (DC-DC converter)
❸ FP-376 flexible board CN305 (VC-86 board)
❷ connector CN307 (VC-86 board)
❺ screw (P2×4)
❼ FP-376 flexible board (S/S switch)
❻ spring
❾ camera block
❶ connector CN654 (VC-86 board)
❽ click

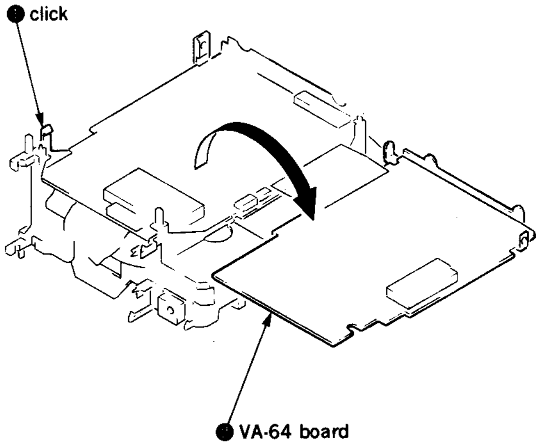
2-5. REMOVAL OF VTR BLOCK


❶ connector CN402
(AU-99 board)
❺ VTR block
❷ FP-427 assy CN201
(FD-44 board)
❹ screw
(M2×4)
❸ FP-376 flexible board
CN205 (FD-44 board)
cabinet (right) assy

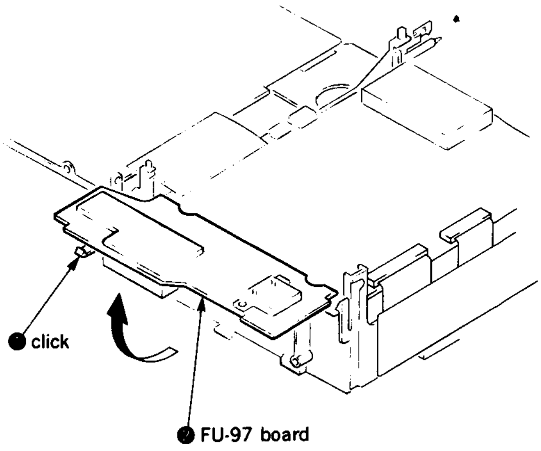
2-6. REMOVAL OF AU-99 BOARD


❶ FP-261 flexible board
CN551 (VA-64 board)
❷ clicks
❸ AU-99 board

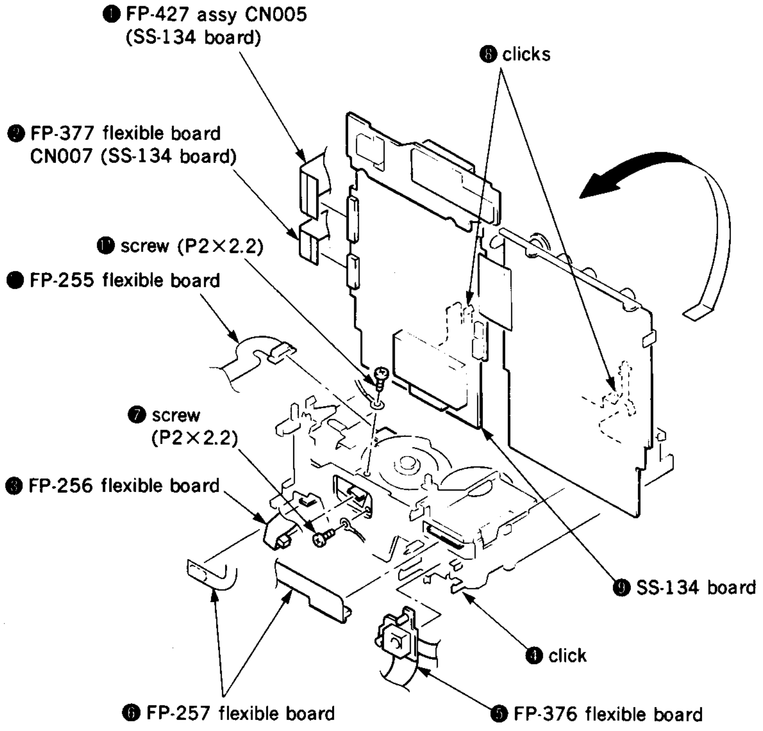
2-7. OPENING OF VA-64 BOARD


❶ click
❷ VA-64 board

2-8. OPENING OF FU-97 BOARD

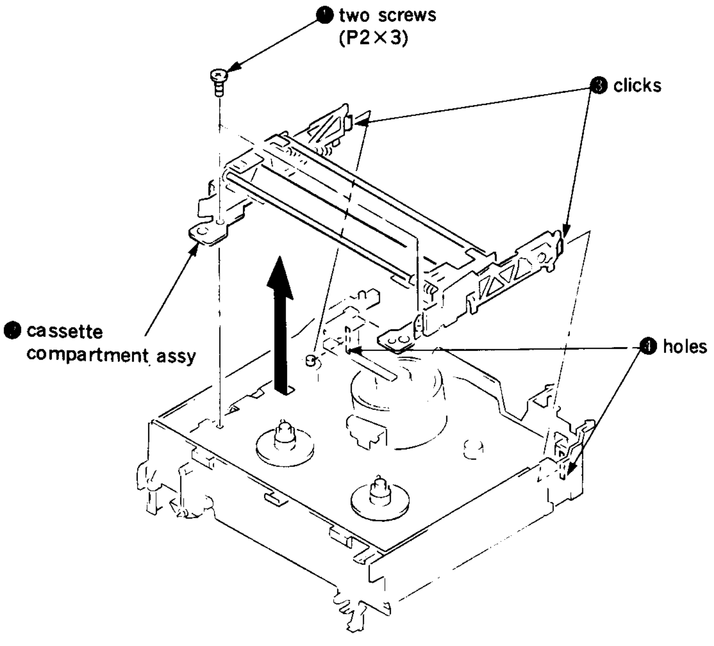

❶ click
❷ FU-97 board

2-9. REMOVAL OF SS-134 BOARD

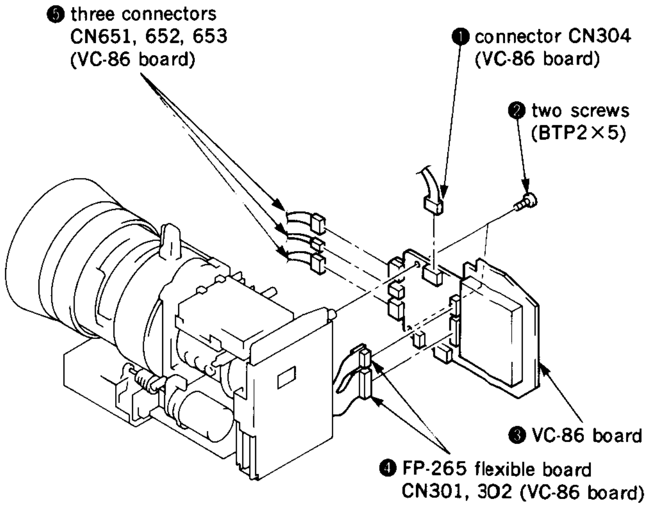

❶ FP-427 assy CN005 (SS-134 board)
❽ clicks
❷ FP-377 flexible board CN007 (SS-134 board)
⓫ screw (P2×2.2)
❿ FP-255 flexible board
❼ screw (P2×2.2)
❸ FP-256 flexible board
❾ SS-134 board
❹ click
❻ FP-257 flexible board
❺ FP-376 flexible board

2-10. REMOVAL OF CASSETTE COMPARTMENT ASSY

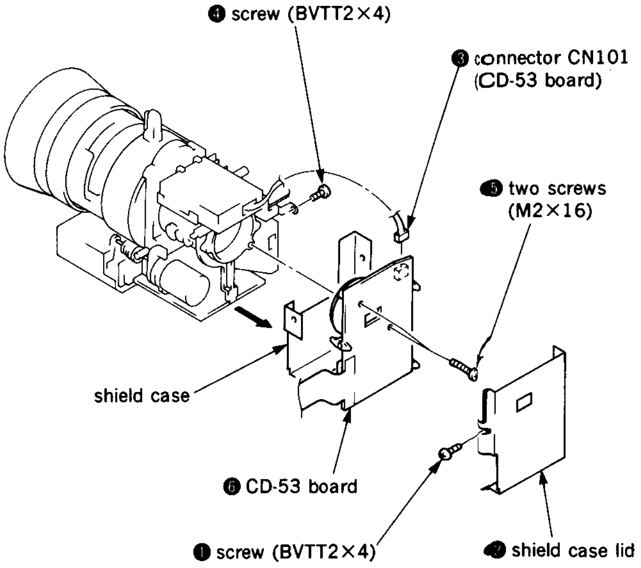
Note: When mounting, fit the clicks ❸ into completely, then clamp two screws ❶.


❶ two screws (P2×3)
❸ clicks
❷ cassette compartment assy
❹ holes

2-11. REMOVAL OF VC-86 BOARD

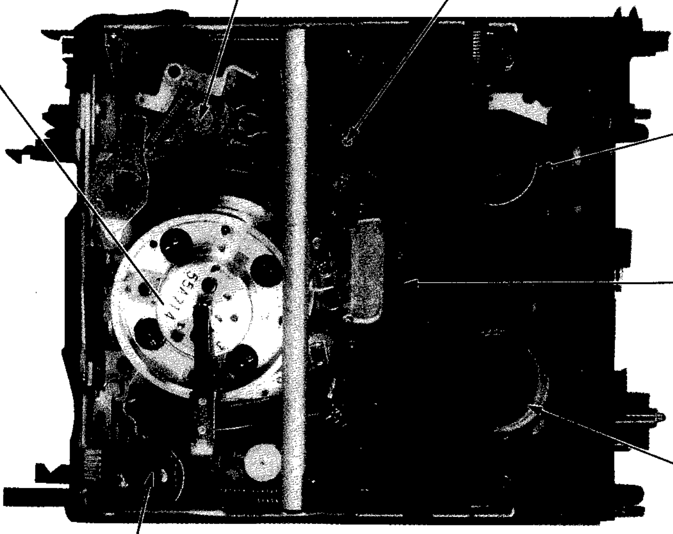

❺ three connectors CN651, 652, 653 (VC-86 board)
❶ connector CN304 (VC-86 board)
❷ two screws (BTP2×5)
❸ VC-86 board
❹ FP-265 flexible board CN301, 302 (VC-86 board)

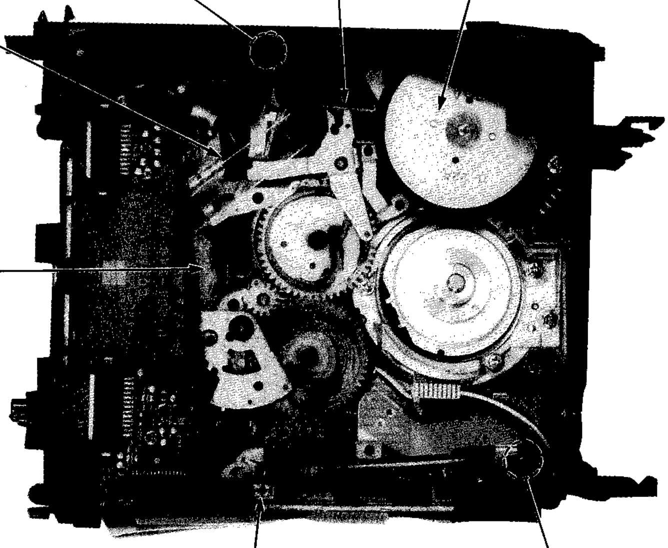
2-12. REMOVAL OF CD-53 BOARD


❹ screw (BVTT2×4)
❸ connector CN101 (CD-53 board)
❺ two screws (M2×16)
shield case
❻ CD-53 board
❶ screw (BVTT2×4)
❷ shield case lid

2-13. INTERNAL VIEWS

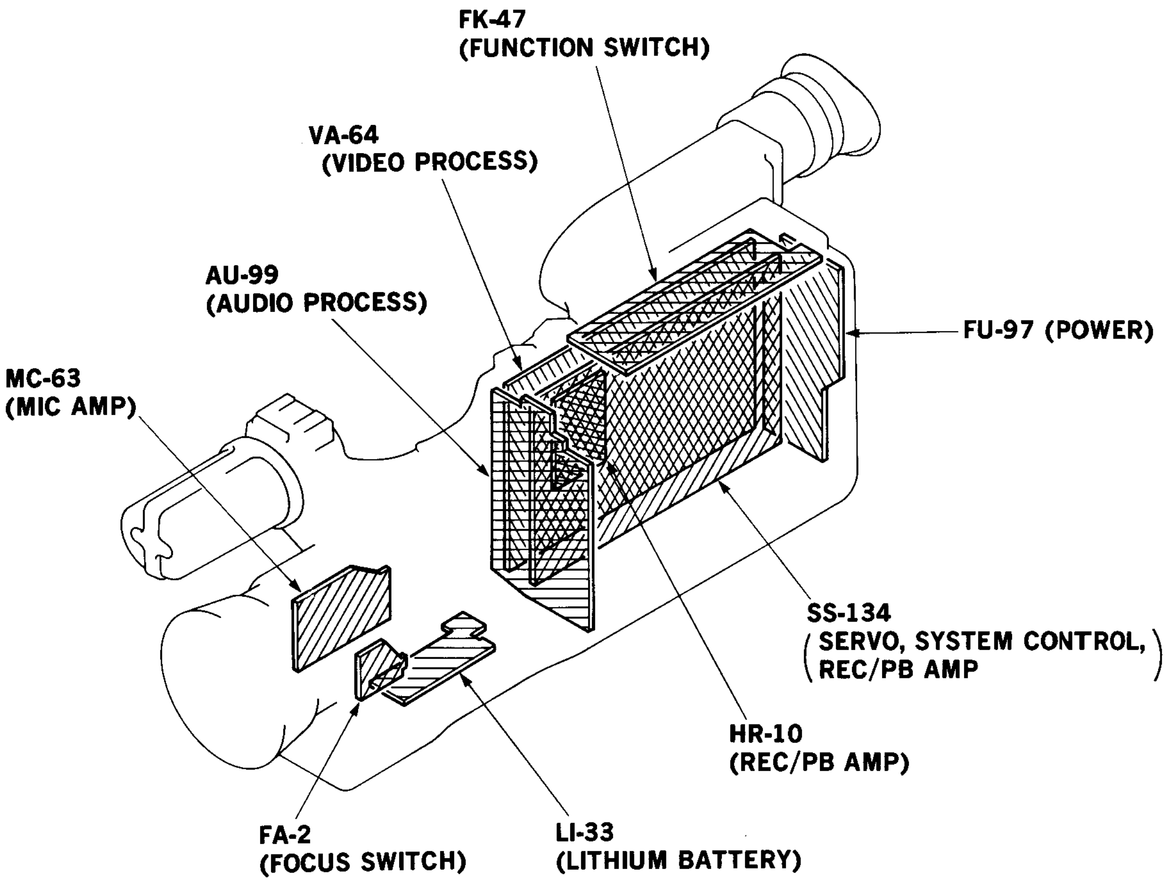
Drum assy (DGU-62A-R)	A-7048-403-A
Upper drum assy (DGR-62-R)	A-7049-341-A

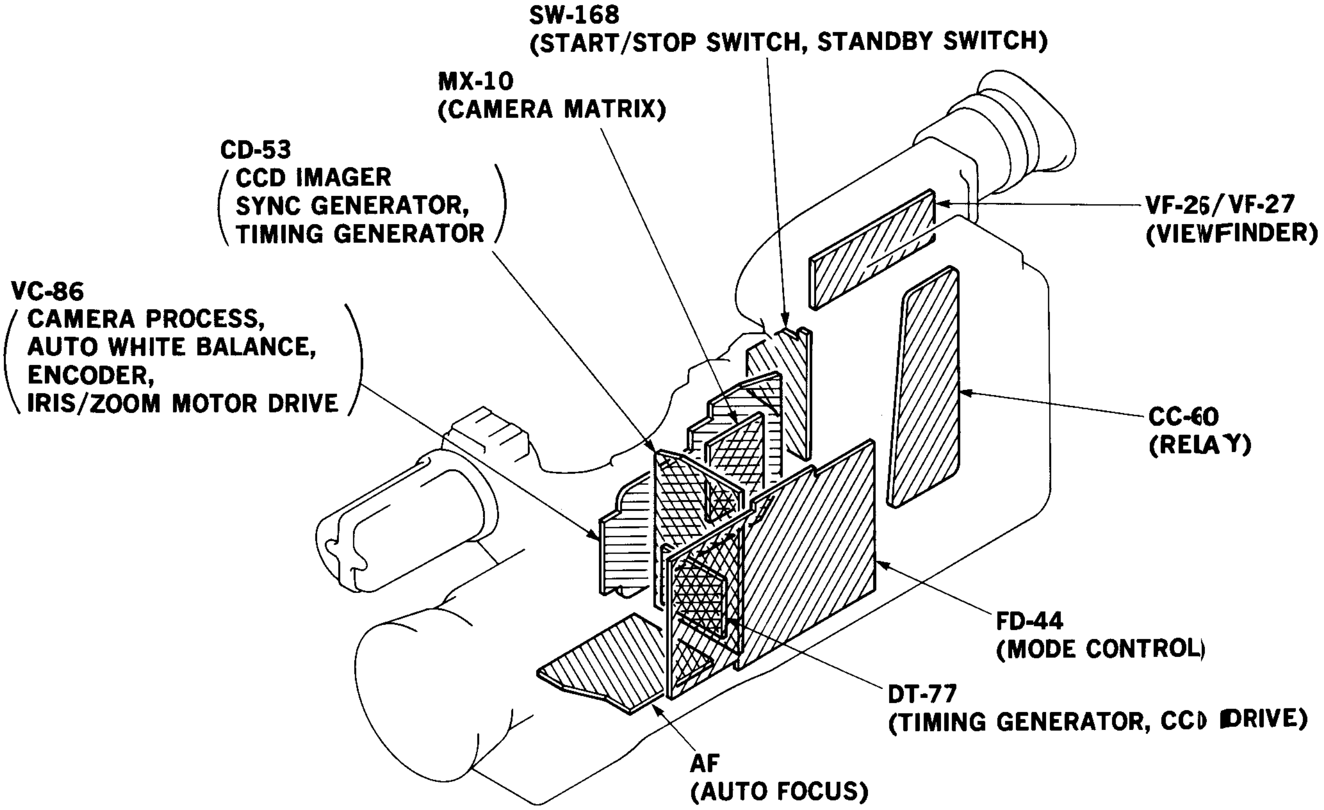

M902
Capstan motor
8-835-331-01
Pinch arm block assy
A-7040-219-A
T reel table assy
X-3728-855-1
Tape top/tape end LED
8-719-940-81
S reel table assy
X-3728-851-1
M903
Threading motor
A-7040-208-A


Tape top sensor (EE-TP109)
8-729-906-48
Timing belt (S)
3-328-866-11
M902
Capstan motor
8-835-331-01
Timing belt (L)
3-741-197-01
RK gear assy
X-3728-866-1
Tape end sensor (EE-TP809)
8-729-906-48
M903
Threading motor
A-7040-208-A

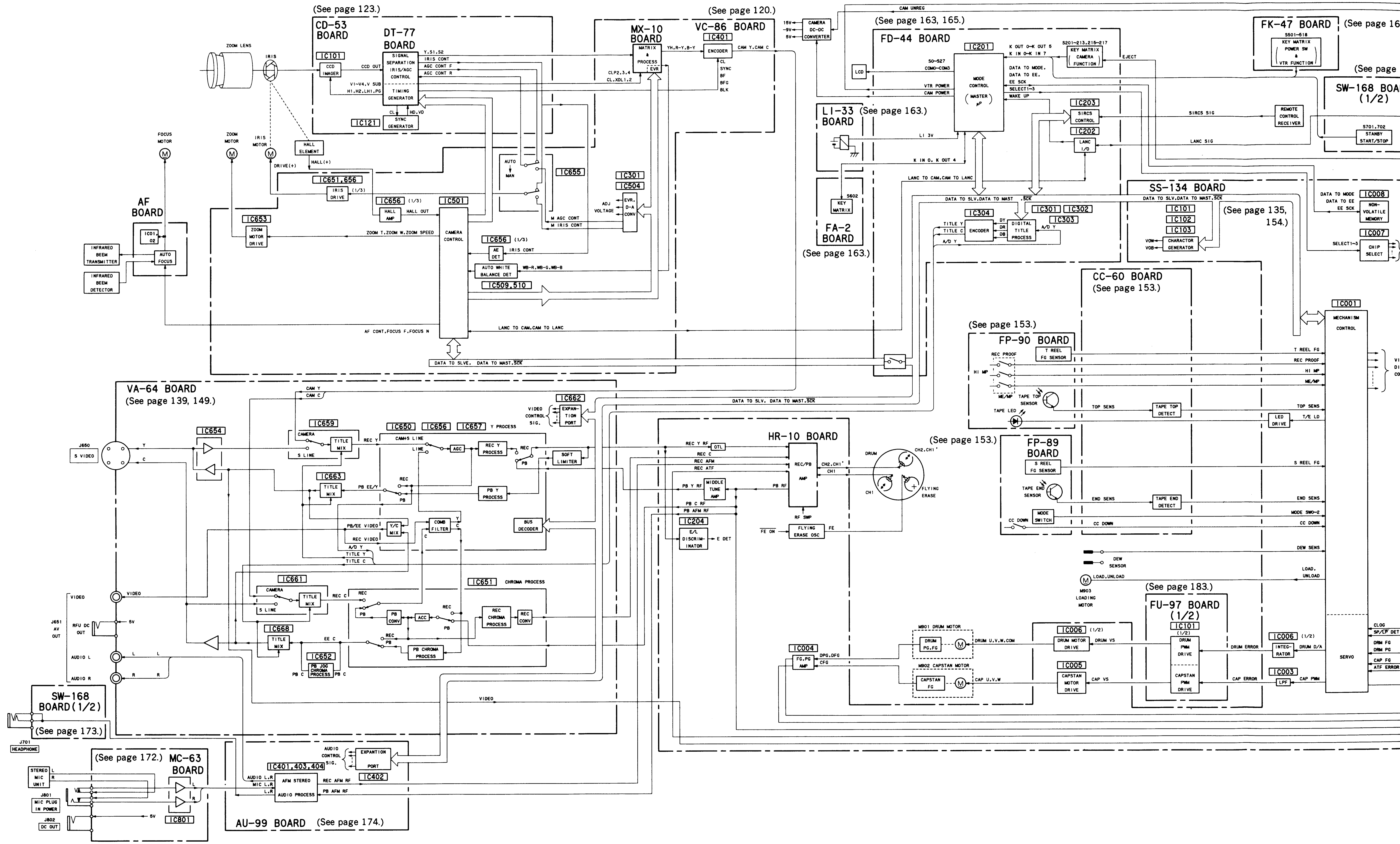
SECTION 3
DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION

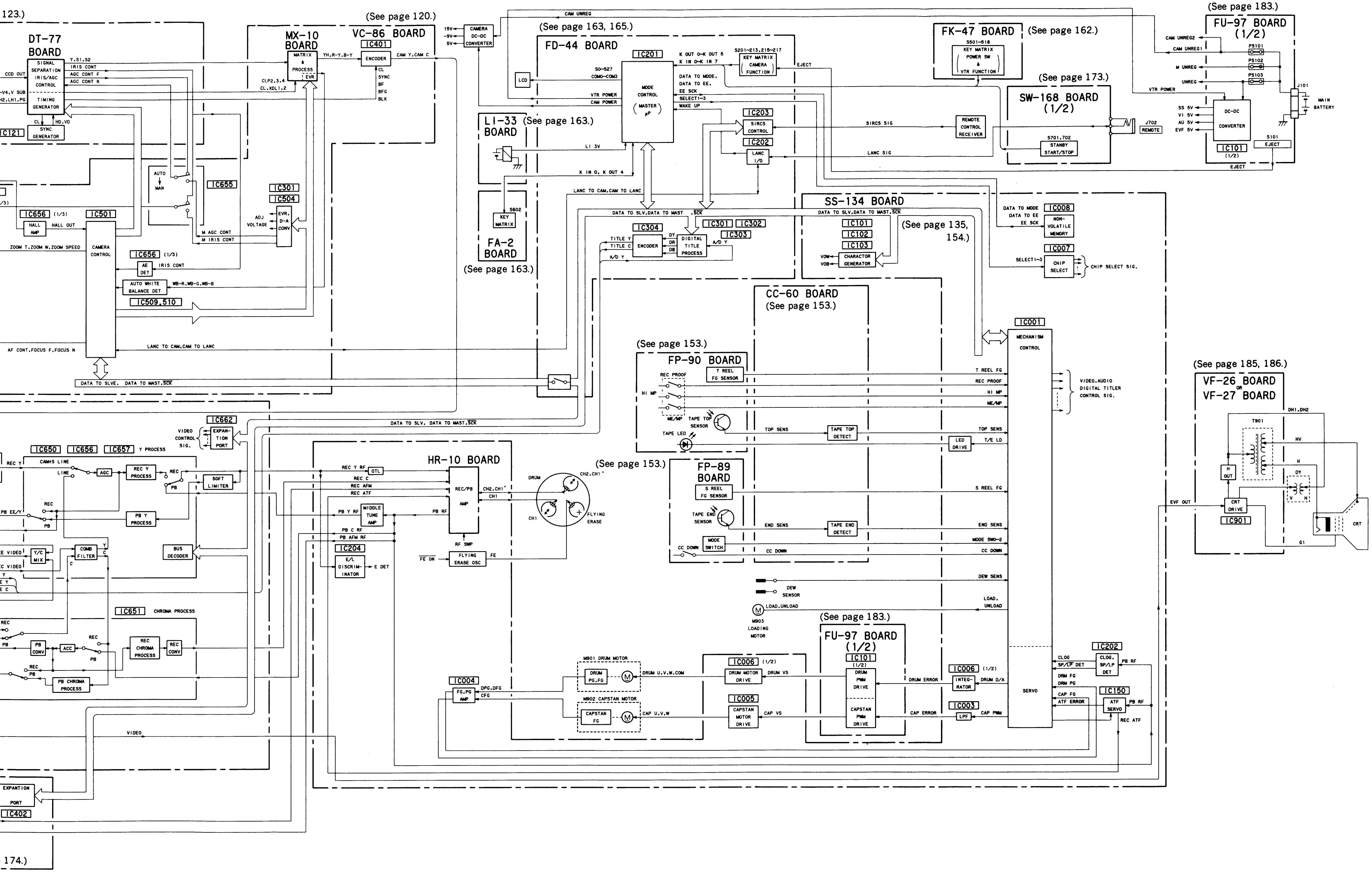

FK-47
(FUNCTION SWITCH)
VA-64
(VIDEO PROCESS)
AU-99
(AUDIO PROCESS)
MC-63
(MIC AMP)
FU-97 (POWER)
SS-134
(SERVO, SYSTEM CONTROL, REC/PB AMP)
HR-10
(REC/PB AMP)
FA-2
(FOCUS SWITCH)
LI-33
(LITHIUM BATTERY)


SW-168
(START/STOP SWITCH, STANDBY SWITCH)
MX-10
(CAMERA MATRIX)
CD-53
(CCD IMAGER SYNC GENERATOR, TIMING GENERATOR)
VC-86
(CAMERA PROCESS, AUTO WHITE BALANCE, ENCODER, IRIS/ZOOM MOTOR DRIVE)
VF-26/VF-27
(VIEWFINDER)
CC-60
(RELAY)
FD-44
(MODE CONTROL)
DT-77
(TIMING GENERATOR, CCD DRIVE)
AF
(AUTO FOCUS)

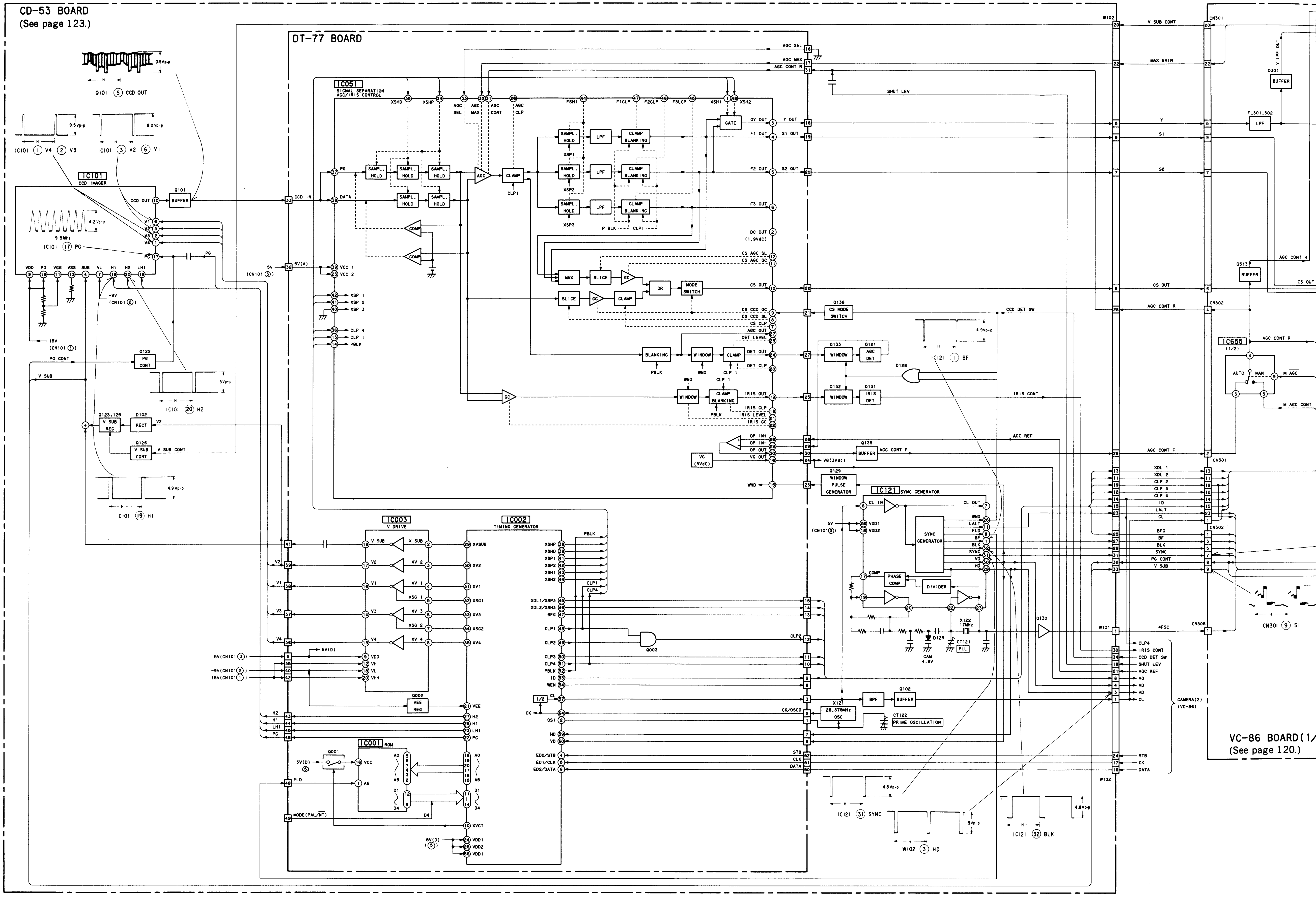
3-2. OVERALL BLOCK DIAGRAM

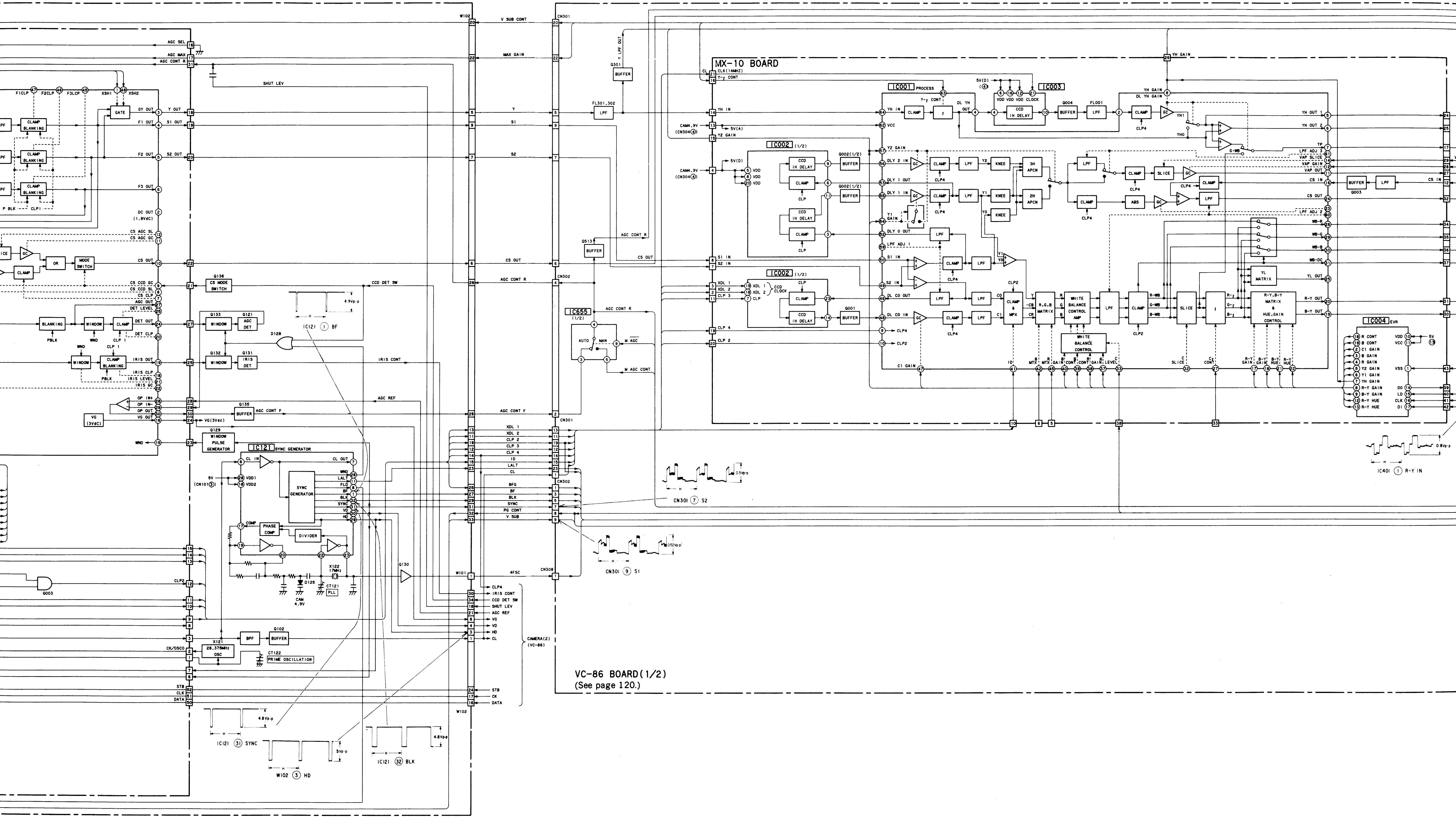


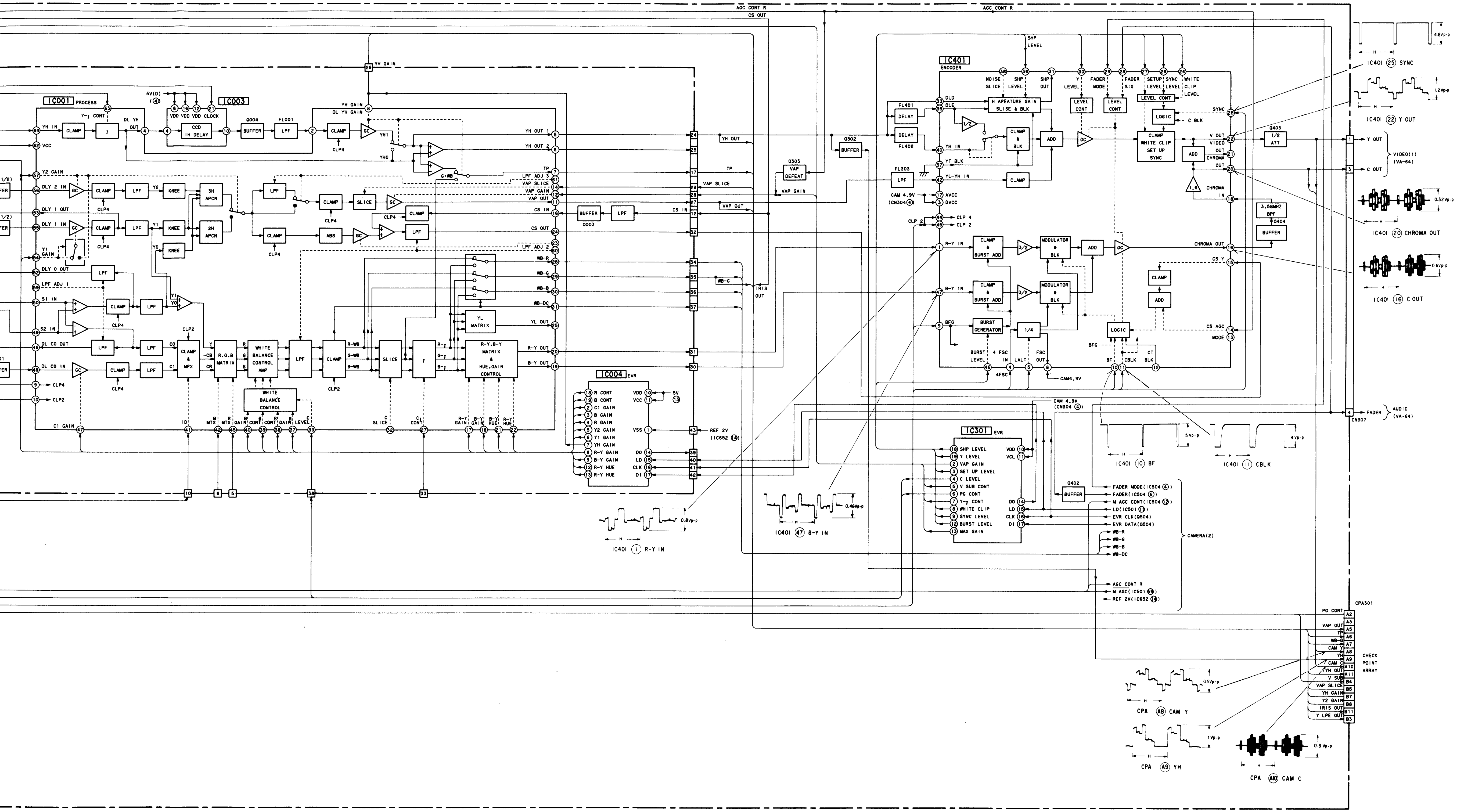
(See page 123.)
CD-53 BOARD
DT-77 BOARD
IC101
CCD IMAGER
CCD OUT
SIGNAL SEPARATION IRIS/AGC CONTROL
TIMING GENERATOR
IC121
SYNC GENERATOR
Y.S1.S2
IRIS CONT
AGC CONT F
AGC CONT R
V1-V4.V SUB
H1.H2.LH1.PG
CL
HD.VD
ZOOM LENS
IRIS
FOCUS MOTOR
ZOOM MOTOR
IRIS MOTOR
HALL ELEMENT
HALL(+)
DRIVE(+)
(See page 120.)
MX-10 BOARD
VC-86 BOARD
MATRIX & PROCESS
EVR
IC401
ENCODER
YH.R-Y.B-Y
CAM Y.CAM C
CL
SYNC
BF
BFG
BLK
CLP2.3.4
CL.XDL1.2
IC651,656
IRIS DRIVE
(1/3)
IC656
HALL AMP
HALL OUT
IC501
CAMERA CONTROL
AUTO
MAN
IC655
IC301
IC504
EVR. D-A CONV
ADJ VOLTAGE
M AGC CONT
M IRIS CONT
AE DET
IRIS CONT
AUTO WHITE BALANCE DET
WB-R.WB-G.WB-B
IC509,510
IC653
ZOOM MOTOR DRIVE
ZOOM T.ZOOM W.ZOOM SPEED
AF BOARD
IC01, 02
AUTO FOCUS
INFRARED BEEM TRANSMITTER
INFRARED BEEM DETECTOR
AF CONT.FOCUS F.FOCUS N
LANC TO CAM.CAM TO LANC
DATA TO SLVE. DATA TO MAST.SCK
15V
-9V
5V
CAMERA DC-DC CONVERTER
CAM UNREG
(See page 163, 165.)
FD-44 BOARD
IC201
MODE CONTROL (MASTER μP)
LCD
SO-S27
COMO-COM3
VTR POWER
CAM POWER
K OUT 0-K OUT 5
K IN 0-K IN 7
S201-213,215-217
KEY MATRIX CAMERA FUNCTION
EJECT
DATA TO MODE.
DATA TO EE.
EE SCK
SELECT1-3
WAKE UP
IC203
SIRCS CONTROL
IC202
LANC I/O
SIRCS SIG
LANC SIG
LI-33 BOARD
(See page 163.)
LI 3V
K IN 0, K OUT 4
LANC TO CAM.CAM TO LANC
FA-2 BOARD
S602
KEY MATRIX
(See page 163.)
DATA TO SLV.DATA TO MAST .SCK
IC304
ENCODER
TITLE Y
TITLE C
A/D Y
DY
DR
DB
IC301
IC302
IC303
DIGITAL TITLE PROCESS
A/D Y
FK-47 BOARD
(See page 16
S501-518
KEY MATRIX POWER SW & VTR FUNCTION
(See page
SW-168 BOA (1/2)
REMOTE CONTROL RECEIVER
S701,702
STANBY START/STOP
SS-134 BOARD
DATA TO SLV.DATA TO MAST.SCK
IC101
IC102
IC103
(See page 135, 154.)
VOW
VOB
CHARACTOR GENERATOR
DATA TO MODE
DATA TO EE
EE SCK
IC008
NON-VOLATILE MEMORY
IC007
SELECT1-3
CHIP SELECT
CC-60 BOARD
(See page 153.)
IC001
MECHANISM CONTROL
(See page 153.)
FP-90 BOARD
REC PROOF
T REEL FG SENSOR
HI MP
ME/MP
TAPE TOP SENSOR
TAPE LED
TOP SENS
TAPE TOP DETECT
LED DRIVE
T REEL FG
REC PROOF
HI MP
ME/MP
TOP SENS
T/E LD
(See page 153.)
FP-89 BOARD
S REEL FG SENSOR
TAPE END SENSOR
END SENS
TAPE END DETECT
CC DOWN
MODE SWITCH
S REEL FG
END SENS
MODE SWO-2
CC DOWN
DEW SENSOR
DEW SENS
M903 LOADING MOTOR
LOAD.UNLOAD
LOAD. UNLOAD
VA-64 BOARD
(See page 139, 149.)
J650
S VIDEO
IC654
Y
C
CAM Y
CAM C
IC659
CAMERA
S LINE
TITLE MIX
REC Y
IC650
IC656
IC657
Y PROCESS
CAM+S LINE
LINE
AGC
REC Y PROCESS
REC
PB
SOFT LIMITER
IC662
VIDEO CONTROL SIG.
EXPAN-TION PORT
IC663
TITLE MIX
PB EE/Y
PB Y PROCESS
PB/EE VIDEO
Y/C MIX
REC VIDEO
A/D Y
TITLE Y
TITLE C
COMB FILTER
BUS DECODER
IC661
TITLE MIX
REC C
IC651
CHROMA PROCESS
PB CONV
ACC
REC CHROMA PROCESS
REC CONV
IC668
EE C
IC652
PB JOG CHROMA PROCESS
PB C
PB CHROMA PROCESS
J651 AV OUT
VIDEO
RFU DC OUT
5V
AUDIO L
AUDIO R
SW-168 BOARD(1/2)
(See page 173.)
J701 HEADPHONE
VIDEO
DATA TO SLV. DATA TO MAST.SCK
HR-10 BOARD
REC Y RF
OTL
REC C
REC AFM
REC ATF
REC/PB AMP
CH2.CH1'
CH1
PB Y RF
MIDDLE TUNE AMP
PB RF
PB C RF
PB AFM RF
IC204
E/L DISCRIM-INATOR
E DET
FE ON
RF SWP
FLYING ERASE OSC
FE
(See page 153.)
DRUM
CH2.CH1'
CH1
FLYING ERASE
M901 DRUM MOTOR
DRUM PG.FG
DRUM U.V.W.COM
M902 CAPSTAN MOTOR
CAPSTAN FG
CAP U.V.W
IC004
FG.PG AMP
DPG.DFG
CFG
IC006
(1/2)
DRUM MOTOR DRIVE
DRUM VS
IC005
CAPSTAN MOTOR DRIVE
CAP VS
(See page 183.)
FU-97 BOARD (1/2)
IC101 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
DRUM ERROR
CAP ERROR
IC006 (1/2)
INTEG-RATOR
DRUM D/A
IC003
LPF
CAP PWM
SERVO
CLOG
SP/LP DET
DRM FG
DRM PG
CAP FG
ATF ERROR
(See page 172.)
MC-63 BOARD
STEREO MIC UNIT
L
R
J801 MIC PLUG IN POWER
J802 DC OUT
5V
IC801
AU-99 BOARD
(See page 174.)
AUDIO CONTROL SIG.
EXPANTION PORT
IC401,403,404
AFM STEREO AUDIO PROCESS
AUDIO L.R
MIC L.R
L.R
REC AFM RF
PB AFM RF
IC402


(See page 123.)
DT-77 BOARD
SIGNAL SEPARATION IRIS/AGC CONTROL
TIMING GENERATOR
SYNC GENERATOR
IC121
IC656 (1/3)
IC501
HALL AMP
CAMERA CONTROL
AE DET
AUTO WHITE BALANCE DET
IC509,510
AF CONT,FOCUS F,FOCUS N
LANC TO CAM,CAM TO LANC
DATA TO SLVE, DATA TO MAST,SCK
MX-10 BOARD
MATRIX & PROCESS
EVR
VC-86 BOARD
(See page 120.)
IC401
ENCODER
IC655
IC301
IC504
EVR, D-A CONV
ADJ VOLTAGE
M AGC CONT
M IRIS CONT
AUTO
MAN
CAMERA DC-DC CONVERTER
CAM UNREG
FD-44 BOARD
(See page 163, 165.)
IC201
MODE CONTROL (MASTER μP)
LCD
KEY MATRIX CAMERA FUNCTION
S201-213,215-217
EJECT
IC203
SIRCS CONTROL
IC202
LANC I/O
L1-33 BOARD
(See page 163.)
FA-2 BOARD
(See page 163.)
KEY MATRIX
S602
IC304
ENCODER
IC301
IC302
IC303
DIGITAL TITLE PROCESS
FK-47 BOARD
(See page 162.)
S501-518
KEY MATRIX POWER SW & VTR FUNCTION
SW-168 BOARD (1/2)
(See page 173.)
REMOTE CONTROL RECEIVER
S701,702
STANBY START/STOP
J702 REMOTE
SIRCS SIG
LANC SIG
FU-97 BOARD (1/2)
(See page 183.)
PS101
PS102
PS103
J101
MAIN BATTERY
DC-DC CONVERTER
IC101 (1/2)
S101 EJECT
SS-134 BOARD
IC101
IC102
IC103
CHARACTOR GENERATOR
(See page 135, 154.)
IC008
NON-VOLATILE MEMORY
IC007
CHIP SELECT
CHIP SELECT SIG.
CC-60 BOARD
(See page 153.)
IC001
MECHANISM CONTROL
SERVO
VIDEO,AUDIO DIGITAL TITLER CONTROL SIG.
FP-90 BOARD
(See page 153.)
T REEL FG SENSOR
REC PROOF
HI MP
TAPE TOP SENSOR
TAPE LED
TAPE TOP DETECT
LED DRIVE
FP-89 BOARD
(See page 153.)
S REEL FG SENSOR
TAPE END SENSOR
TAPE END DETECT
MODE SWITCH
CC DOWN
DEW SENSOR
M903 LOADING MOTOR
IC662
EXPANTION PORT
IC650
IC656
IC657
Y PROCESS
AGC
REC Y PROCESS
SOFT LIMITER
PB Y PROCESS
Y/C MIX
COMB FILTER
BUS DECODER
IC651
CHROMA PROCESS
PB CONV
ACC
REC CHROMA PROCESS
REC CONV
PB CHROMA PROCESS
HR-10 BOARD
REC/PB AMP
MIDDLE TUNE AMP
IC204
E/L DISCRIMINATOR
FLYING ERASE OSC
(See page 153.)
DRUM
FLYING ERASE
M901 DRUM MOTOR
DRUM PG,FG
M902 CAPSTAN MOTOR
CAPSTAN FG
IC004
FG,PG AMP
IC006 (1/2)
DRUM MOTOR DRIVE
IC005
CAPSTAN MOTOR DRIVE
FU-97 BOARD (1/2)
(See page 183.)
IC101 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
IC006 (1/2)
INTEGRATOR
IC003
LPF
IC202
CLOG, SP/LP DET
IC150
ATF SERVO
VIDEO
EXPANTION PORT
IC402
(See page 174.)
VF-26 BOARD OR VF-27 BOARD
(See page 185, 186.)
T901
H OUT
CRT DRIVE
IC901
EVF OUT
HV
DY
CRT

3-3. CAMERA (1) BLOCK DIAGRAM


CD-53 BOARD
(See page 123.)
DT-77 BOARD
IC101 CCD IMAGER
Q101 BUFFER
Q101 ⑤ CCD OUT
IC051 SIGNAL SEPARATION AGC/IRIS CONTROL
IC003 V DRIVE
IC002 TIMING GENERATOR
IC001 ROM
IC121 SYNC GENERATOR
SYNC GENERATOR
PHASE COMP
DIVIDER
Q122 PG CONT
Q123,125 V SUB REG
D102 RECT
Q126 V SUB CONT
Q002 VEE REG
Q003
Q133 WINDOW
Q121 AGC DET
Q132 WINDOW
Q131 IRIS DET
Q136 CS MODE SWITCH
Q135 BUFFER
Q129 WINDOW PULSE GENERATOR
X121 28.375MHz OSC
CT122 PRIME OSCILLATION
Q102 BUFFER
Q130
X122 17MHz
W101
W102
CN301
CN302
CN308
Q301 BUFFER
FL301,302 LPF
Q513 BUFFER
IC655 (1/2)
AUTO MAN
VC-86 BOARD (1/
(See page 120.)
CAMERA(2) (VC-86)
IC121 ① BF
IC121 ㉛ SYNC
IC121 ㉜ BLK
W102 ③ HD
CN301 ⑨ S1
IC101 ⑲ H1
IC101 ⑳ H2
IC101 ⑰ PG
IC101 ① V4 ② V3
IC101 ③ V2 ⑥ V1
Y OUT
S1 OUT
S2 OUT
CS OUT
AGC CONT R
CCD DET SW
IRIS CONT
AGC REF
AGC CONT F
SHUT LEV
V SUB CONT
MAX GAIN
AGC SEL
AGC MAX
4FSC


MX-10 BOARD
VC-86 BOARD(1/2)
(See page 120.)
IC001 PROCESS
IC002 (1/2)
IC003
IC004 EVR
IC121 SYNC GENERATOR
IC655 (1/2)
W101
W102
CN301
CN302
CN308
CAMERA(2) (VC-86)
V SUB CONT
MAX GAIN
AGC SEL
AGC MAX
AGC CONT R
SHUT LEV
Y OUT
S1 OUT
S2 OUT
F1 OUT
F2 OUT
F3 OUT
DC OUT (1.9Vdc)
GATE
CLAMP BLANKING
CS OUT
CS MODE SWITCH
CCD DET SW
WINDOW
AGC DET
IRIS DET
IRIS CONT
AGC REF
AGC CONT F
WINDOW PULSE GENERATOR
SYNC GENERATOR
PHASE COMP
DIVIDER
X121 28.378MHz OSC
X122 17MHz
CT121 PLL
CT122 PRIME OSCILLATION
BPF
BUFFER
4FSC
XDL 1
XDL 2
CLP 2
CLP 3
CLP 4
ID
LALT
CL
BFG
BF
BLK
SYNC
PG CONT
STB
CLK
DATA
YH GAIN
Y LPF OUT
Y-γ CONT
CLK(14MHZ)
YH IN
VCC
Y2 GAIN
CCD 1H DELAY
DLY 2 IN
DLY 1 OUT
DLY 1 IN
DLY 0 OUT
LPF ADJ 1
S1 IN
S2 IN
DL C0 OUT
DL C0 IN
C1 GAIN
KNEE
3H APCN
2H APCN
SLICE
ABS
CLAMP & MPX
R.G.B MATRIX
WHITE BALANCE CONTROL AMP
WHITE BALANCE CONTROL
R-Y,B-Y MATRIX & HUE,GAIN CONTROL
YL MATRIX
YH OUT 1
YH OUT 2
TP
LPF ADJ 3
VAP SLICE
VAP GAIN
VAP OUT
CS IN
LPF ADJ 2
WB-R
WB-G
WB-B
WB-DC
YL OUT
R-Y OUT
B-Y OUT
R CONT
B CONT
C1 GAIN
B GAIN
R GAIN
Y2 GAIN
Y1 GAIN
YH GAIN
R-Y GAIN
B-Y GAIN
R-Y HUE
B-Y HUE
IC121 ① BF
IC121 ㉛ SYNC
W102 ③ HD
IC121 ㉜ BLK
CN301 ⑦ S2
CN301 ⑨ S1
IC401 ① R-Y IN
4.9Vp-p
4.8Vp-p
5Vp-p
0.5Vp-p
0.52Vp-p
0.8Vp-p


IC001 PROCESS
IC003
IC004 EVR
IC401 ENCODER
IC301 EVR
YH GAIN
YH IN
CLAMP
DL YH OUT
VDD VDD VDD CLOCK
CCD 1H DELAY
Q004 BUFFER
FL001 LPF
VCC
Y2 GAIN
DLY 2 IN
DLY 1 OUT
DLY 1 IN
Y1 GAIN
DLY 0 OUT
LPF ADJ 1
S1 IN
S2 IN
DL CO OUT
DL CO IN
CLP4
CLP2
C1 GAIN
KNEE
3H APCN
2H APCN
SLICE
ABS
GC
R.G.B MATRIX
WHITE BALANCE CONTROL AMP
WHITE BALANCE CONTROL
YL MATRIX
R-Y,B-Y MATRIX & HUE,GAIN CONTROL
YH OUT 1
YH OUT 2
TP
LPF ADJ 3
VAP SLICE
VAP GAIN
VAP OUT
CS IN
CS OUT
LPF ADJ 2
WB-R
WB-G
WB-B
WB-DC
YL OUT
R-Y OUT
B-Y OUT
R CONT
B CONT
C1 GAIN
B GAIN
R GAIN
Y2 GAIN
Y1 GAIN
YH GAIN
R-Y GAIN
B-Y GAIN
R-Y HUE
B-Y HUE
VDD
VCC
VSS
DO
LD
CLK
DI
REF 2V (IC652 ⑭)
AGC CONT R
CS OUT
Q303 VAP DEFEAT
Q302 BUFFER
Q003 BUFFER
IRIS OUT
NOISE SLICE
SHP LEVEL
SHP OUT
Y LEVEL
FADER MODE
FADER SIG
SETUP LEVEL
SYNC LEVEL
WHITE CLIP LEVEL
FL401 DELAY
FL402 DELAY
H APEATURE GAIN SLISE & BLK
LEVEL CONT
LOGIC
CLAMP WHITE CLIP SET UP SYNC
SYNC
V OUT
VIDEO OUT
CHROMA OUT
CHROMA IN
FL303 LPF
YL-YH IN
AVCC
DVCC
CAM 4.9V (CN304 ⑧)
CLP 4
CLP 2
R-Y IN
B-Y IN
BFG
CLAMP & BURST ADD
MODULATOR & BLK
BURST GENERATOR
BURST LEVEL
4 FSC IN
LALT
FSC OUT
4FSC
CAM4.9V
CS Y
CS AGC MODE
BF CBLK
CT BLK
3.58MHZ BPF
Q404 BUFFER
Q403 1/2 ATT
Y OUT
C OUT
VIDEO(1) (VA-64)
FADER
AUDIO (VA-64)
CN307
IC401 ㉕ SYNC 4.8Vp-p
IC401 ㉒ Y OUT 1.2Vp-p
IC401 ⑳ CHROMA OUT 0.32Vp-p
IC401 ⑯ C OUT 0.6Vp-p
IC401 ⑩ BF 5Vp-p
IC401 ⑪ CBLK 4Vp-p
IC401 ① R-Y IN 0.8Vp-p
IC401 ㊼ B-Y IN 0.46Vp-p
SHP LEVEL
Y LEVEL
VAP GAIN
SET UP LEVEL
C LEVEL
V SUB CONT
PG CONT
Y-γ CONT
WHITE CLIP
SYNC LEVEL
BURST LEVEL
MAX GAIN
Q402 BUFFER
FADER MODE (IC504 ④)
FADER (IC504 ⑥)
M AGC CONT (IC504 ⑬)
LD (IC501 ③)
EVR CLK (Q504)
EVR DATA (Q504)
CAMERA(2)
AGC CONT R
M AGC (IC501 ⑬)
REF 2V (IC652 ⑭)
CPA301
PG CONT
VAP OUT
CAM Y
CAM C
YH OUT
V SUB
VAP SLICE
YH GAIN
Y2 GAIN
IRIS OUT
Y LPE OUT
CHECK POINT ARRAY
CPA A8 CAM Y 0.5Vp-p
CPA A9 YH 1Vp-p
CPA A10 CAM C 0.3Vp-p

3-4. CAMERA SYSTEM CONTROL VC-86 BOARD IC501 (MC68HC11E9)

〔Description〕

MC68HC11E9 is a 8-bit one-chip micro controller with a built-in nonvolatile memory (EEPROM). The camera system can be controlled by only this micro controller. In addition, protocol master control of the LANC communication can be performed.

1. Function

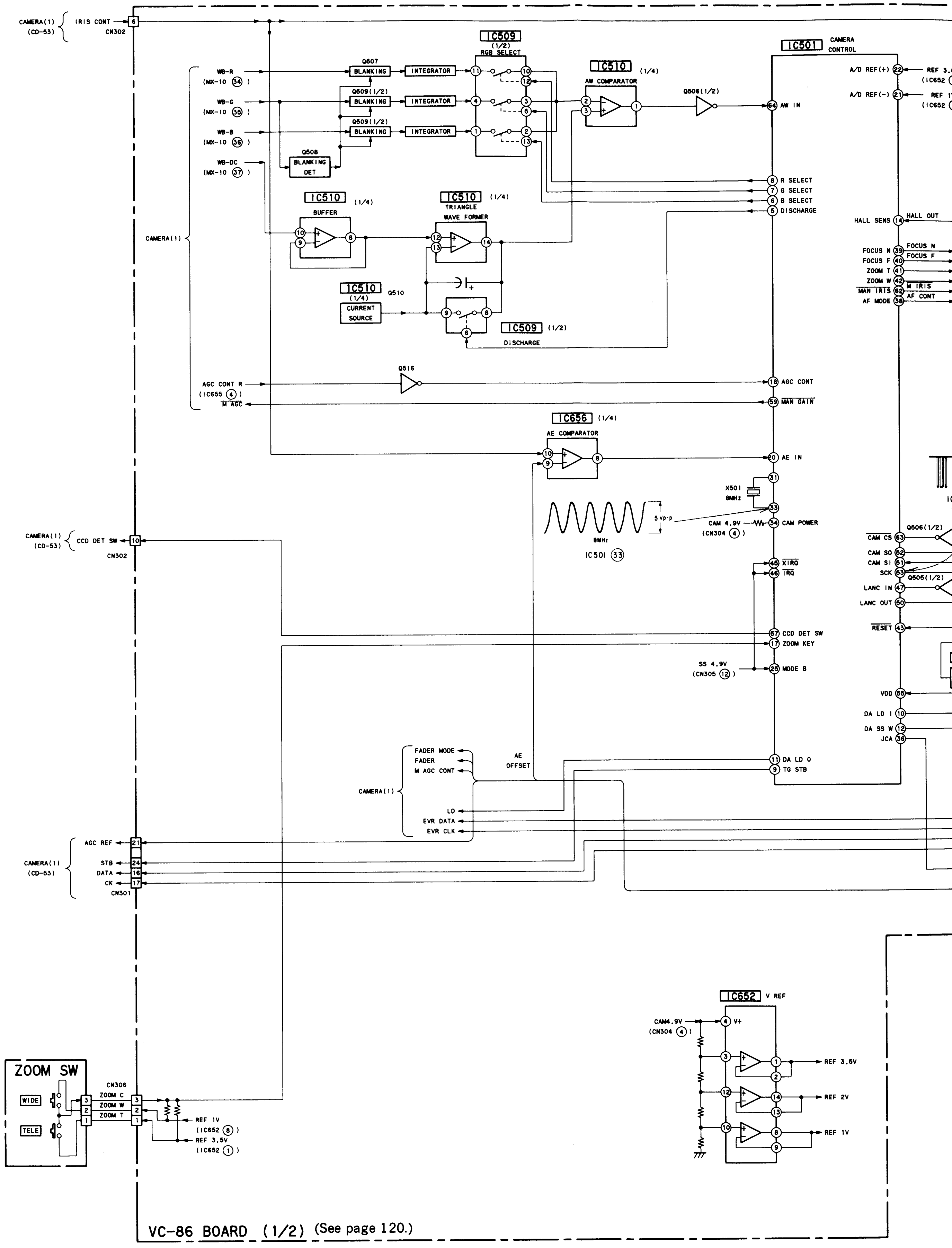
1) EVR Control
2) AWB Control
3) AE Control
4) LANC communication protocol control

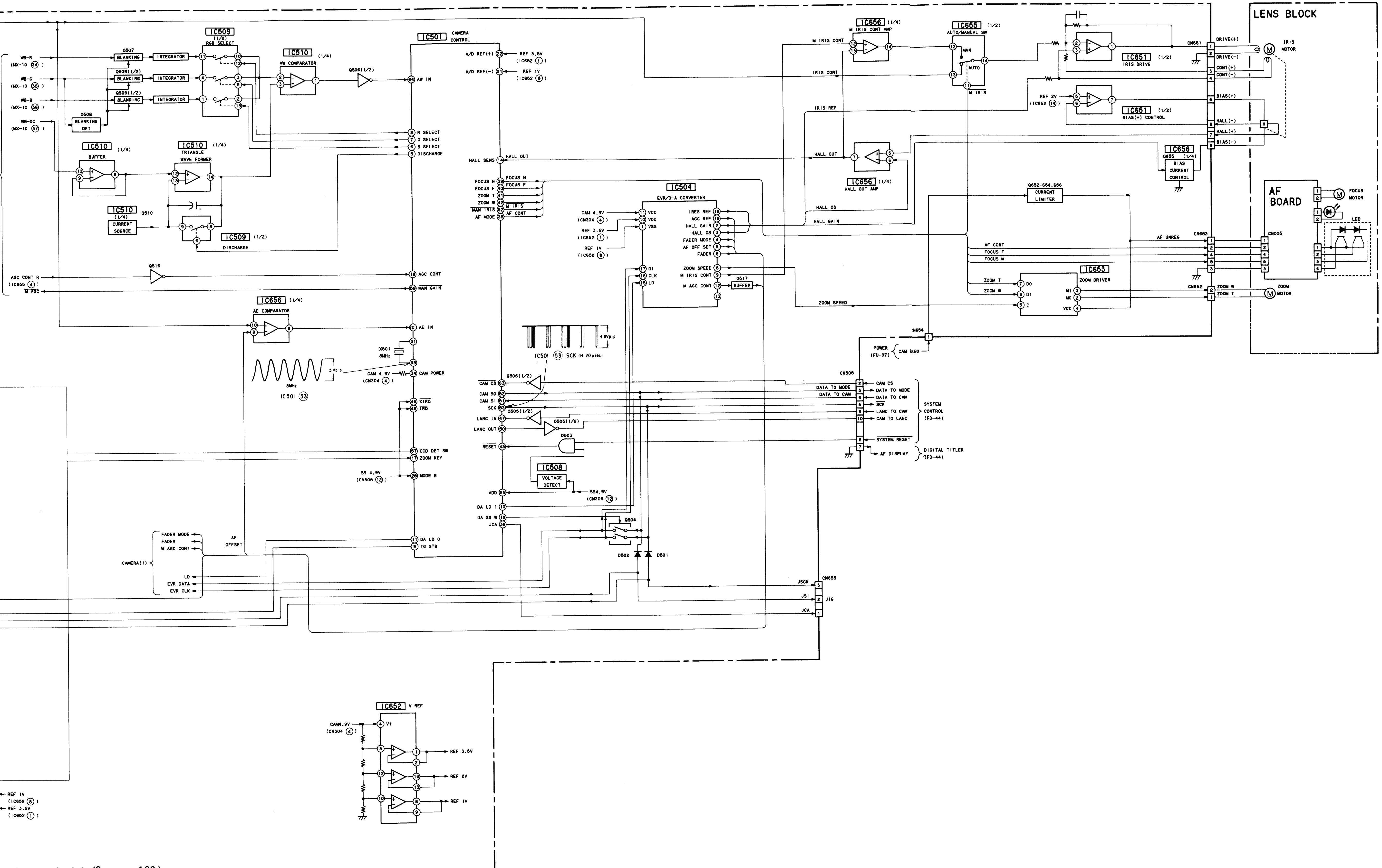
2. Pin Description

PIN No.	PIN Name	I/O	Function
1	AE	I	——
2	NC	—	——
3	NC	—	——
4	NC	—	——
5	DISCHG	O	AWB. AE Integration-type A/D reset pulse
6	B SELECT	O	AWB Instrumentation line select pulse (blue)
7	G SELECT	O	AWB Instrumentation line select pulse (green)
8	R SELECT	O	AWB Instrumentation line select pulse (red)
9	TG STB	O	TG strobe.
10	DA LD1	O	D/A (IC504) load pulse.
11	DA LD0	O	D/A (MX-10 Board, IC301) load pulse.
12	DA SSW	O	D/A communication line switching.
13	F SENS1	I	——
14	HALL SENS	I	Hall element voltage input (Analog input)
15	ZOOM SENS	I	——
16	AN5	I	——
17	ZOOM KEY	I	Zoom switch voltage input (Analog input)
18	AGC CONT	I	AGC voltage input (Analog input)
19	F SENS2	I	——
20	AE IN	I	Integral type A/D converter comparactor input for AE.
21	A/D REF(−)	—	Built-in A/D converter the minimum standard voltage (Analog input)
22	A/D REF(+)	—	Built-in A/D converter the minimum standard voltage (Analog input)
23	V_{SS}	—	GND
24	V_{SS}	—	GND
25	MODE B	I	Pull up to SS4.9V
26	NC	—	——
27	MODA	I	Pull down to GND
28	STR A	—	——
29	E	—	——
30	STR B	—	——
31	EXTAL	O	Built-in inverter output for oscillating element
32	NC	—	——

PIN No.	PIN Name	I/O	Function
33	XTAL	I	Built-in inverter input for oscillating element
34	CAM POWER	I	Camera power source rise supervision
35	NC	—	——
36	JCS	O	——
37	PC2	—	——
38	AF MODE	O	ON/OFF specification of AF mode.
39	FOCUS N	O	Focus motor N-direction rotating designation
40	FOCUS F	O	Focus motor ∞-direction rotating designation
41	ZOOM T	O	Zoom motor T-direction rotating designation
42	ZOOM W	O	Zoom motor W-direction rotating designation
43	$\overline{\text{RESET}}$	I	Reset
44	NC	—	——
45	$\overline{\text{XIRQ}}$	I	Pull up to SS4.9V
46	$\overline{\text{IRQ}}$	I	Pull up to SS4.9V
47	LANC IN	I	LANC input
48	NC	—	——
49	V_{SS}	—	GND
50	LANC OUT	O	LANC output
51	CAM SI	I	Serial data input
52	CAM SO	O	Serial data output
53	SCK	O	Serial clock
54	SENS DRIVE	O	——
55	V_{DD}	—	SS4.9V
56	FADER B/$\overline{\text{W}}$	O	Specification of FADER mode.
57	PA6	O	CCD DET switch select
58	OC3	—	——
59	$\overline{\text{MAN GAIN}}$	O	AGC system automatic/manual select
60	NC	—	——
61	NC	—	——
62	$\overline{\text{MAN IRIS}}$	O	IRIS system automatic/manual select
63	$\overline{\text{CAMCS}}$	I	Camera chip select input
64	AW IN	I	AWB Integration-type A/D converter comparator input

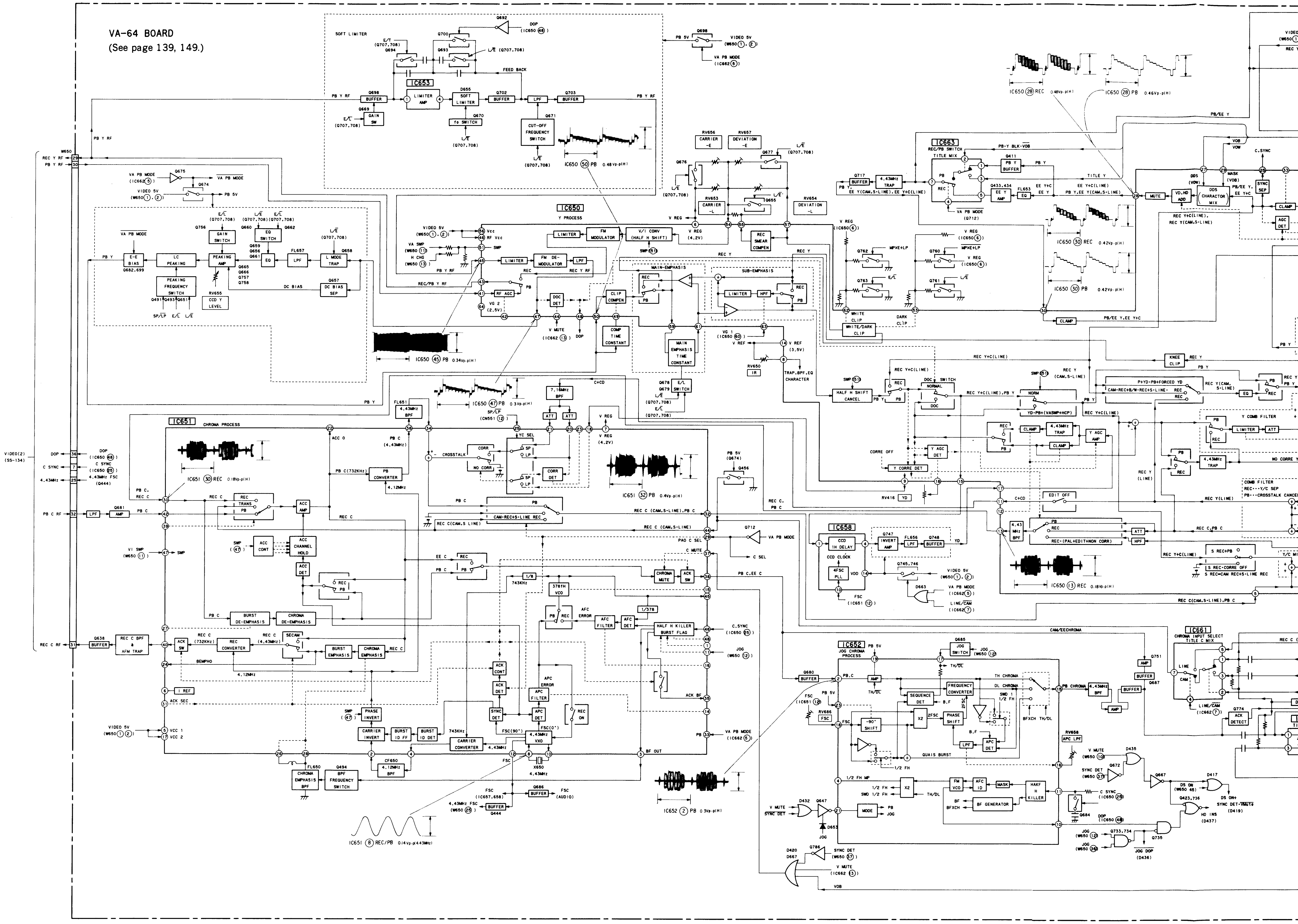
3-5. CAMERA (2) BLOCK DIAGRAM

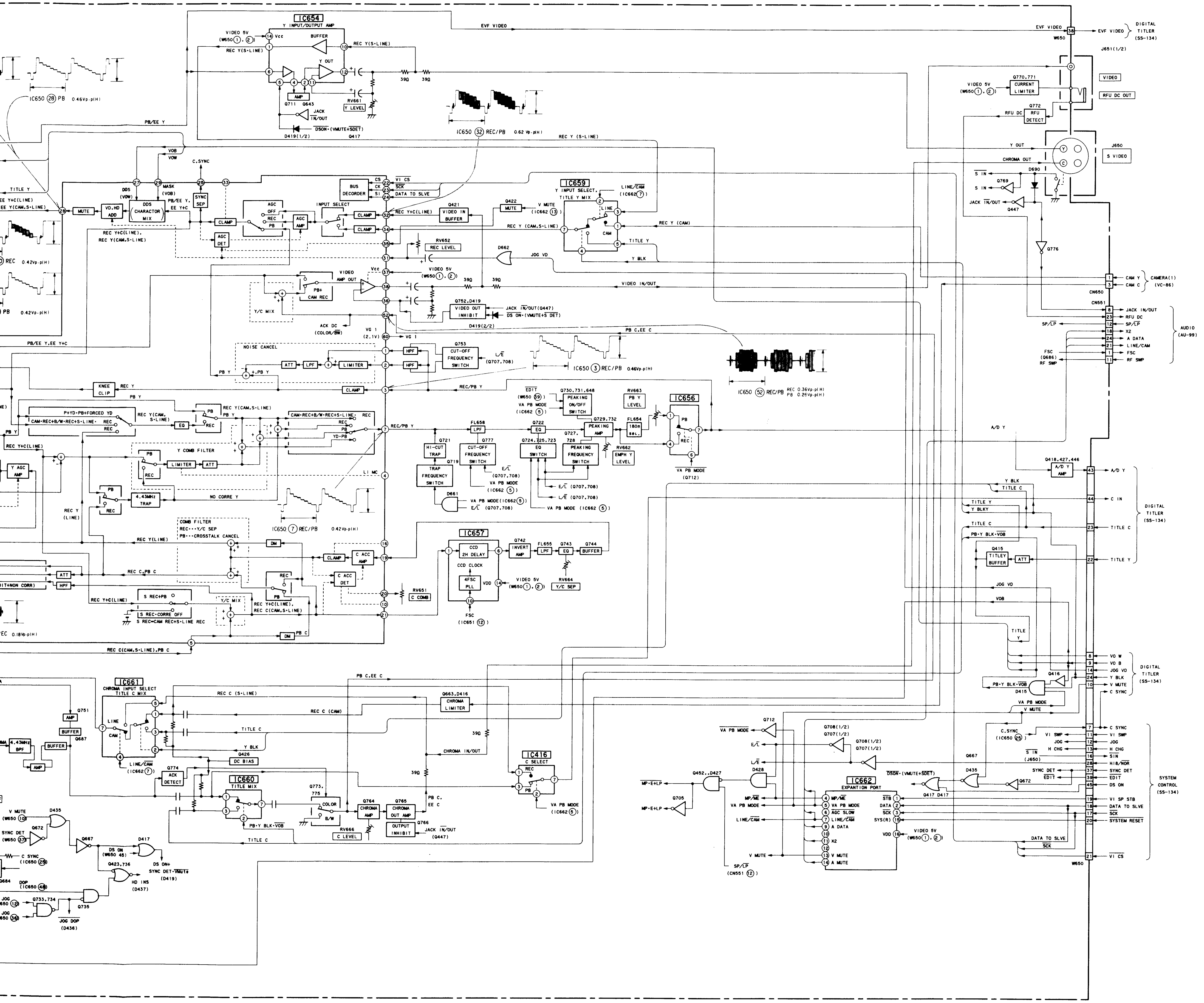

CAMERA(1) (CD-53)
IRIS CONT
CN302
WB-R (MX-10 ㉞)
WB-G (MX-10 ㉟)
WB-B (MX-10 ㊱)
WB-DC (MX-10 ㊲)
Q507 BLANKING
Q509(1/2) BLANKING
Q508 BLANKING DET
INTEGRATOR
IC509 (1/2) RGB SELECT
IC510 (1/4) AW COMPARATOR
Q506(1/2)
IC501 CAMERA CONTROL
AW IN
R SELECT
G SELECT
B SELECT
DISCHARGE
A/D REF(+)
A/D REF(−)
REF 3.5V (IC652)
REF 1V (IC652)
HALL SENS
HALL OUT
FOCUS N
FOCUS F
ZOOM T
ZOOM W
MAN IRIS
M IRIS
AF CONT
AF MODE
CAMERA(1)
IC510 (1/4) BUFFER
IC510 (1/4) TRIANGLE WAVE FORMER
IC510 (1/4) CURRENT SOURCE
Q510
IC509 (1/2) DISCHARGE
AGC CONT R (IC655 ④)
M AGC
Q516
AGC CONT
MAN GAIN
IC656 (1/4) AE COMPARATOR
AE IN
X501 8MHz
5Vp-p
8MHz
IC501 ㉝
CAM 4.9V (CN304 ④)
CAM POWER
CAM CS
CAM SO
CAM SI
SCK
Q505(1/2)
LANC IN
LANC OUT
RESET
XIRQ
IRQ
CCD DET SW
CN302
CCD DET SW
ZOOM KEY
SS 4.9V (CN305 ⑫)
MODE B
VDD
DA LD 1
DA SS W
JCA
DA LD 0
TG STB
FADER MODE
FADER
M AGC CONT
AE OFFSET
LD
EVR DATA
EVR CLK
AGC REF
STB
DATA
CK
CN301
ZOOM SW
WIDE
TELE
CN306
ZOOM C
ZOOM W
ZOOM T
REF 1V (IC652 ⑧)
REF 3.5V (IC652 ①)
IC652 V REF
CAM4.9V (CN304 ④)
V+
REF 3.5V
REF 2V
REF 1V
VC-86 BOARD (1/2) (See page 120.)


LENS BLOCK
IC509 (1/2) RGB SELECT
IC510 (1/4) AW COMPARATOR
IC501 CAMERA CONTROL
IC510 (1/4) BUFFER
IC510 (1/4) TRIANGLE WAVE FORMER
IC510 (1/4) CURRENT SOURCE
IC509 (1/2) DISCHARGE
IC656 (1/4) AE COMPARATOR
IC656 (1/4) M IRIS CONT AMP
IC655 (1/2) AUTO/MANUAL SW
IC651 (1/2) IRIS DRIVE
IC651 (1/2) BIAS(+) CONTROL
IC656 (1/4) HALL OUT AMP
IC656 Q655 (1/4) BIAS CURRENT CONTROL
Q652-654,656 CURRENT LIMITER
IC504 EVR/D-A CONVERTER
IC653 ZOOM DRIVER
IC508 VOLTAGE DETECT
IC652 V REF
Q507 BLANKING
Q509(1/2) BLANKING
Q508 BLANKING DET
INTEGRATOR
Q506(1/2)
Q516
Q505(1/2)
Q517 BUFFER
Q504
D501
D502
D503
Q510
X501 8MHz
WB-R (MX-10 34)
WB-G (MX-10 35)
WB-B (MX-10 36)
WB-DC (MX-10 37)
AGC CONT R (IC655 4)
M AGC
AW IN
R SELECT
G SELECT
B SELECT
DISCHARGE
HALL SENS
HALL OUT
FOCUS N
FOCUS F
ZOOM T
ZOOM W
MAN IRIS
M IRIS
AF MODE
AF CONT
AGC CONT
MAN GAIN
AE IN
CAM POWER
CAM 4.9V (CN304 4)
A/D REF(+)
A/D REF(-)
REF 3.5V (IC652 1)
REF 1V (IC652 8)
REF 2V (IC652 14)
5Vp-p
8MHz
IC501 33
IC501 53 SCK (H 20μsec)
4.8Vp-p
XIRQ
IRQ
CCD DET SW
ZOOM KEY
MODE B
S5 4.9V (CN305 12)
CAM CS
CAM SO
CAM SI
SCK
LANC IN
LANC OUT
RESET
VDD
S54.9V (CN305 12)
DA LD 1
DA SS W
JCA
DA LD 0
TG STB
CAMERA(1)
FADER MODE
FADER
M AGC CONT
AE OFFSET
LD
EVR DATA
EVR CLK
VCC
VSS
IRES REF
AGC REF
HALL GAIN
HALL OS
AF OFF SET
DI
CLK
ZOOM SPEED
M IRIS CONT
M IRIS
IRIS CONT
IRIS REF
HALL OS
HALL GAIN
AF UNREG
ZOOM W
ZOOM T
MAN
AUTO
CN651
DRIVE(+)
DRIVE(-)
CONT(+)
CONT(-)
BIAS(+)
HALL(-)
HALL(+)
BIAS(-)
IRIS MOTOR
AF BOARD
CN005
FOCUS MOTOR
LED
CN653
CN652
ZOOM MOTOR
D0
D1
C
M1
M0
VCC
N654
POWER (FU-97)
CAM UREG
CN305
DATA TO MODE
DATA TO CAM
LANC TO CAM
CAM TO LANC
SYSTEM RESET
SYSTEM CONTROL (FD-44)
AF DISPLAY
DIGITAL TITLER (FD-44)
CN655
JSCK
JSI
JIG
CAM4.9V (CN304 4)
V+
REF 3.5V
REF 2V
REF 1V
REF 1V (IC652 8)
REF 3.5V (IC652 1)

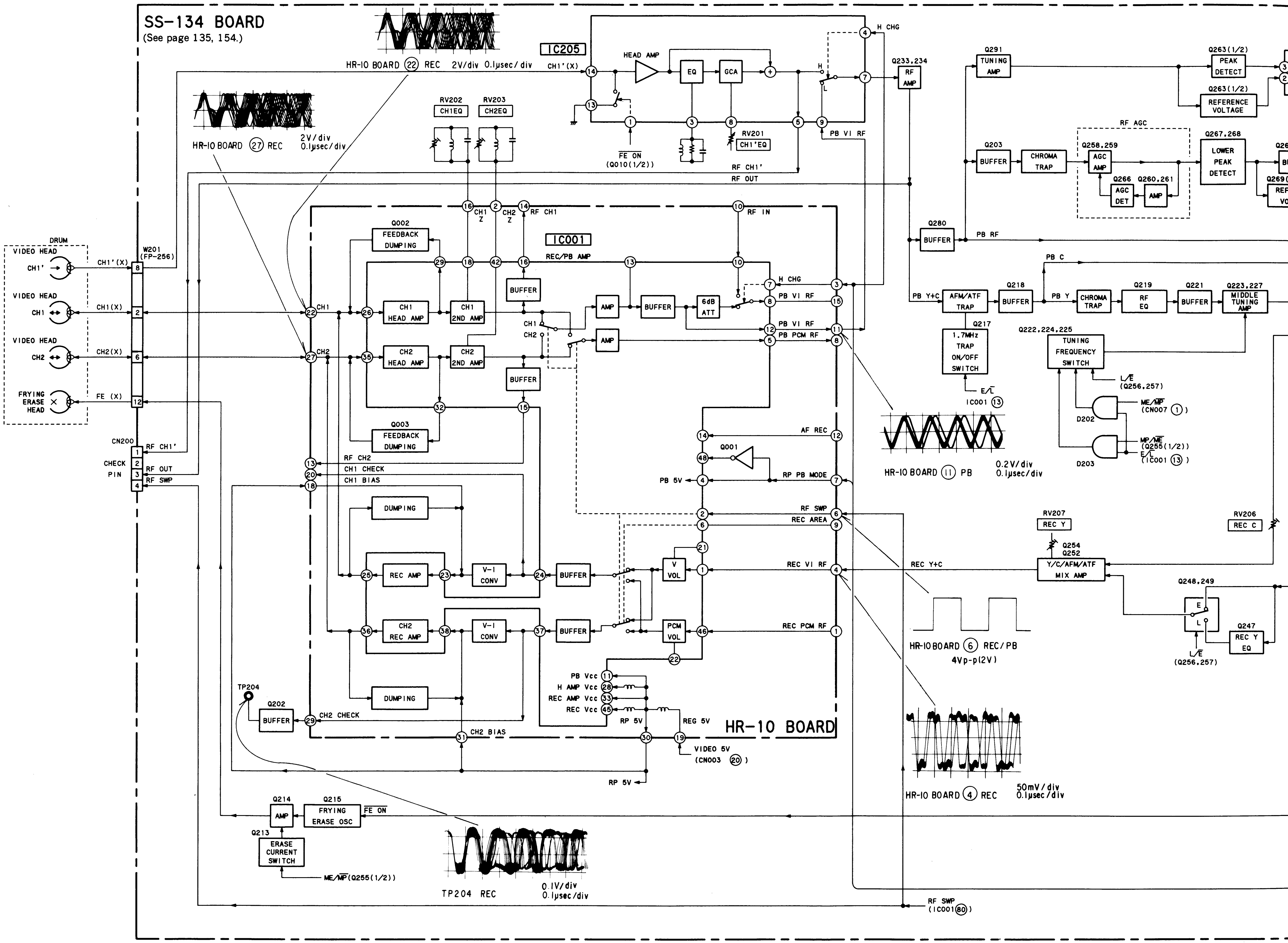
6 BOARD (1/2) (See page 120.)

3-7. VIDEO (1) BLOCK DIAGRAM

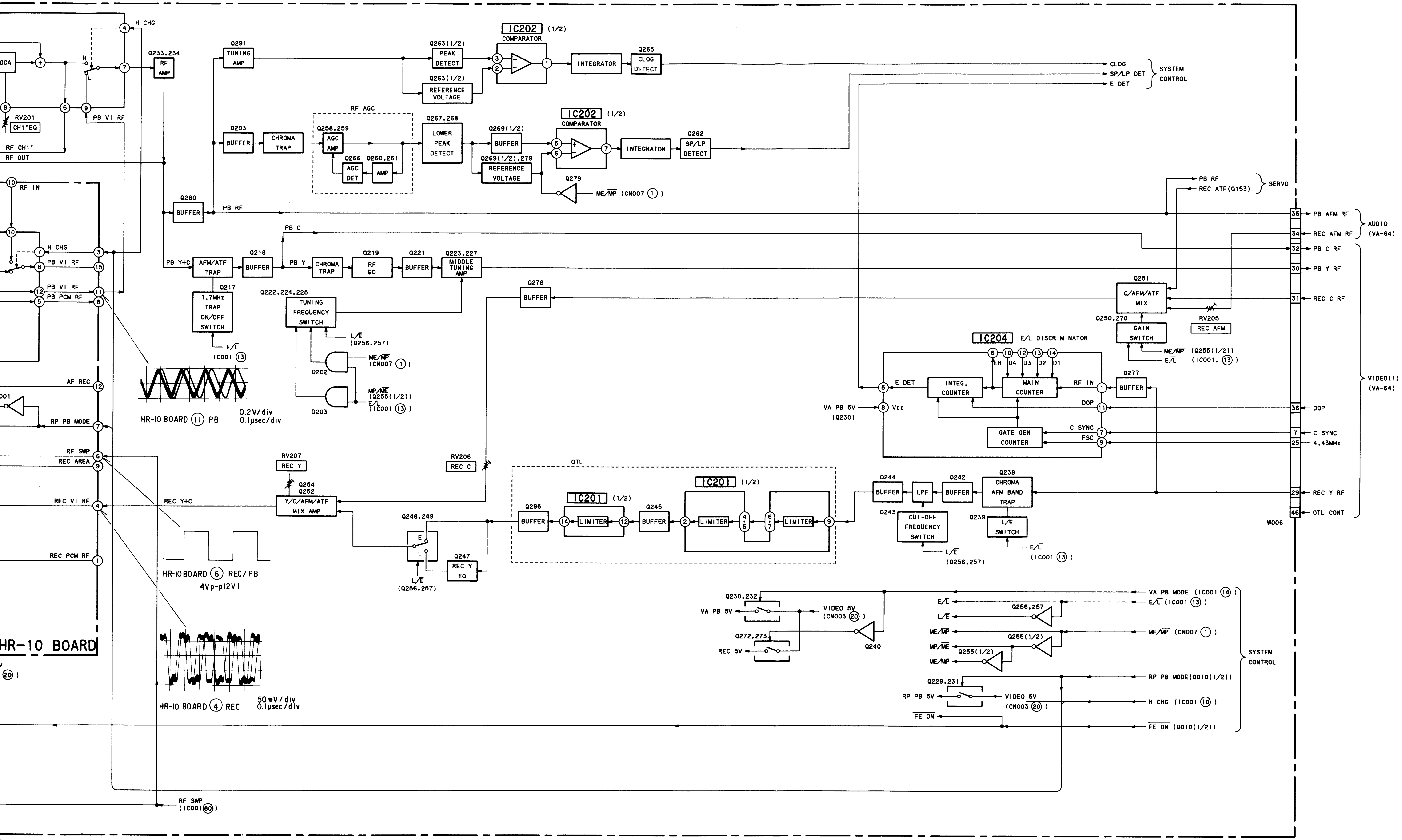

VA-64 BOARD
(See page 139, 149.)
IC653
SOFT LIMITER
LIMITER AMP
SOFT LIMITER
BUFFER
LPF
CUT-OFF FREQUENCY SWITCH
FEED BACK
PB Y RF
IC650 (50) PB 0.48Vp-p(H)
IC650
Y PROCESS
LIMITER
FM MODULATOR
V/I CONV (HALF H SHIFT)
FM DE-MODULATOR
RF AGC
DOC DET
CLIP COMPEN
MAIN-EMPHASIS
SUB-EMPHASIS
MAIN EMPHASIS TIME CONSTANT
COMP TIME CONSTANT
WHITE/DARK CLIP
IC650 (45) PB 0.34Vp-p(H)
IC650 (47) PB 0.3Vp-p(H)
RV656 CARRIER -E
RV657 DEVIATION -E
RV653 CARRIER -L
RV654 DEVIATION -L
REC SMEAR COMPEN
E-E BIAS
LC PEAKING
PEAKING AMP
PEAKING FREQUENCY SWITCH
GAIN SWITCH
EQ SWITCH
EQ
LPF
L MODE TRAP
DC BIAS SEP
RV655 CCD Y LEVEL
IC651
CHROMA PROCESS
PB CONVERTER
ACC AMP
ACC CONT
ACC CHANNEL HOLD
ACC DET
REC TRANS
CROSSTALK
CORR
NO CORR
YC SEL
CAM•REC+S-LINE REC
BURST DE-EMPHASIS
CHROMA DE-EMPHASIS
REC CONVERTER
SECAM
BURST EMPHASIS
CHROMA EMPHASIS
CHROMA MUTE
ACK SW
AFC FILTER
AFC DET
HALF H KILLER BURST FLAG
3761H VCO
1/8
1/378
APC ERROR
APC FILTER
APC DET
SYNC DET
ACK CONT
ACK DET
PHASE INVERT
CARRIER INVERT
BURST ID FF
BURST ID DET
CARRIER CONVERTER
4.43MHz VXO
CF650 4.12MHz BPF
FL650 CHROMA EMPHASIS BPF
Q494 BPF FREQUENCY SWITCH
IC651 (30) REC 0.18Vp-p(H)
IC651 (32) PB 0.4Vp-p(H)
IC651 (8) REC/PB 0.4Vp-p(4.43MHz)
IC652 (2) PB 0.3Vp-p(H)
7.16MHz BPF
ATT
FL651 4.43MHz BPF
VIDEO(2) (SS-134)
W650
REC Y RF
PB Y RF
DOP
C SYNC
4.43MHz FSC
PB C RF
REC C RF
REC C BPF & AFM TRAP
IC663
REC/PB SWITCH TITLE MIX
PB Y BUFFER
4.43MHz TRAP
EE Y AMP
FL653 EQ
IC650 (28) REC 0.48Vp-p(H)
IC650 (28) PB 0.46Vp-p(H)
IC650 (30) REC 0.42Vp-p(H)
IC650 (30) PB 0.42Vp-p(H)
MUTE
VD,HD ADD
DDS CHARACTOR MIX
SYNC SEP
CLAMP
AGC DET
KNEE CLIP
HALF H SHIFT CANCEL
DOC SWITCH
NORMAL
DOC
Y AGC AMP
Y CORRE DET
COMB FILTER
IC658
CCD 1H DELAY
CCD CLOCK
4FSC PLL
INVERT AMP
FL656 LPF
BUFFER
IC650 (13) REC 0.18Vp-p(H)
EDIT OFF
IC652
JOG CHROMA PROCESS
JOG SWITCH
FREQUENCY CONVERTER
SEQUENCE DET
PHASE SHIFT
-90° SHIFT
X2
APC DET
FM VCO
AFC ID
MASK
HAKF H KILLER
BF GENERATOR
MODE
4.43MHz BPF
IC661
CHROMA INPUT SELECT TITLE C MIX
ACK DETECT
JOG DOP


IC654
Y INPUT/OUTPUT AMP
VIDEO 5V
BUFFER
Y OUT
REC Y(S-LINE)
AMP
JACK IN/OUT
RV661 Y LEVEL
DSON·(VMUTE+SDET)
EVF VIDEO
W650
DIGITAL TITLER (SS-134)
J651(1/2)
VIDEO
RFU DC OUT
Q770,771 CURRENT LIMITER
Q772 RFU DETECT
J650
S VIDEO
Y OUT
CHROMA OUT
IC650 (28) PB 0.46Vp-p(H)
IC650 (32) REC/PB 0.62 Vp-p(H)
PB/EE Y
TITLE Y
VD,HD ADD
MUTE
DDS CHARACTOR MIX
SYNC SEP
C.SYNC
MASK (VOB)
AGC
CLAMP
AGC AMP
AGC DET
INPUT SELECT
BUS DECORDER
CS
CK
SI
VI CS
SCK
DATA TO SLVE
Q421 VIDEO IN BUFFER
Q422 MUTE
V MUTE
IC659
Y INPUT SELECT, TITLE Y MIX
LINE/CAM
REC Y (CAM)
Y BLK
RV652 REC LEVEL
D662
JOG VD
VIDEO AMP OUT
PB+ CAM REC
Y/C MIX
VIDEO IN/OUT
Q752,D419 VIDEO OUT INHIBIT
ACK DC (COLOR/BW)
VG 1 (2.1V)
PB C,EE C
NOISE CANCEL
ATT
LPF
LIMITER
HPF
Q753 CUT-OFF FREQUENCY SWITCH
IC650 (3) REC/PB 0.46Vp-p(H)
IC650 (52) REC/PB REC 0.36Vp-p(H) PB 0.26Vp-p(H)
KNEE CLIP
REC/PB Y
FL658 LPF
Q722 EQ
Q730,731,648 PEAKING ON/OFF SWITCH
Q729,732 PEAKING AMP
RV663 PB Y LEVEL
FL654 180n sec.
IC656
RV662 EMPH Y LEVEL
VA PB MODE (Q712)
Q721 HI-CUT TRAP
Q777 CUT-OFF FREQUENCY SWITCH
Q724,725,723 EQ SWITCH
Q727,728 PEAKING FREQUENCY SWITCH
Q719 TRAP FREQUENCY SWITCH
D661
Y COMB FILTER
4.43MHz TRAP
NO CORRE Y
IC650 (7) REC/PB 0.42Vp-p(H)
COMB FILTER
REC···Y/C SEP
PB···CROSSTALK CANCEL
DM
C ACC AMP
C ACC DET
RV651 C COMB
IC657
CCD 2H DELAY
CCD CLOCK
4FSC PLL
FSC (IC651 (12))
Q742 INVERT AMP
FL655 LPF
Q743 EQ
Q744 BUFFER
RV664 Y/C SEP
S REC+PB
S REC·CORRE OFF
REC C(CAM,S-LINE),PB C
CAM Y
CAM C
CAMERA(1) (VC-86)
CN650
CN551
JACK IN/OUT
RFU DC
SP/LP
X2
A DATA
LINE/CAM
FSC
RF SWP
AUDIO (AU-99)
A/D Y
Q418,427,446 A/D Y AMP
C IN
TITLE C
TITLE Y
DIGITAL TITLER (SS-134)
Q415 TITLEY BUFFER
JOG VD
VOB
VO W
VO B
V BLK
V MUTE
C SYNC
Q416
PB·Y BLK·VOB
D415
IC661
CHROMA INPUT SELECT TITLE C MIX
REC C (S-LINE)
REC C (CAM)
Q663,D416 CHROMA LIMITER
CHROMA IN/OUT
IC416
C SELECT
4.43MHz BPF
BUFFER
AMP
Q774 ACK DETECT
D426 DC BIAS
IC660
TITLE MIX
Q773,775 COLOR B/W
Q764 CHROMA AMP
Q765 CHROMA OUT AMP
Q766 OUTPUT INHIBIT
RV666 C LEVEL
Q712
Q708(1/2) Q707(1/2)
Q452,,D427
D428
Q705
MP·E+LP
IC662
EXPANTION PORT
MP/ME
VA PB MODE
AGC SLOW
LINE/CAM
A DATA
X2
V MUTE
A MUTE
STB
DATA
SCK
SYS(R)
VDD
VI SMP
JOG
H CHG
S IN
HI8/NOR
SYNC DET
EDIT
DS ON
VI SP STB
SYSTEM RESET
SYSTEM CONTROL (SS-134)
Q667
D435
Q672
Q417 D417
Q423,736
Q733,734
Q735
JOG DOP (D436)
HD INS (D437)
DS ON+ SYNC DET·VMUTE (D419)

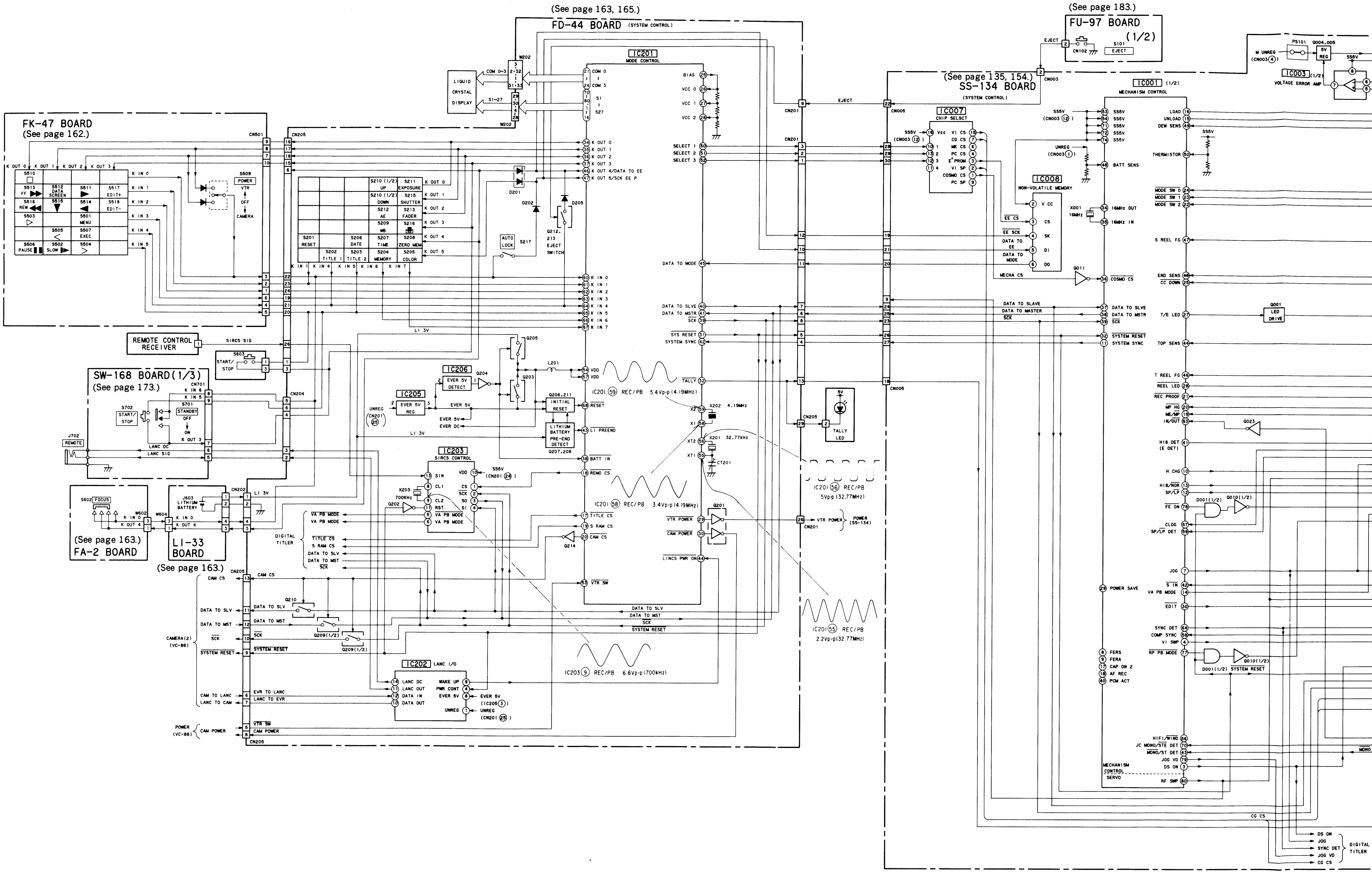
3-8. VIDEO (2) BLOCK DIAGRAM

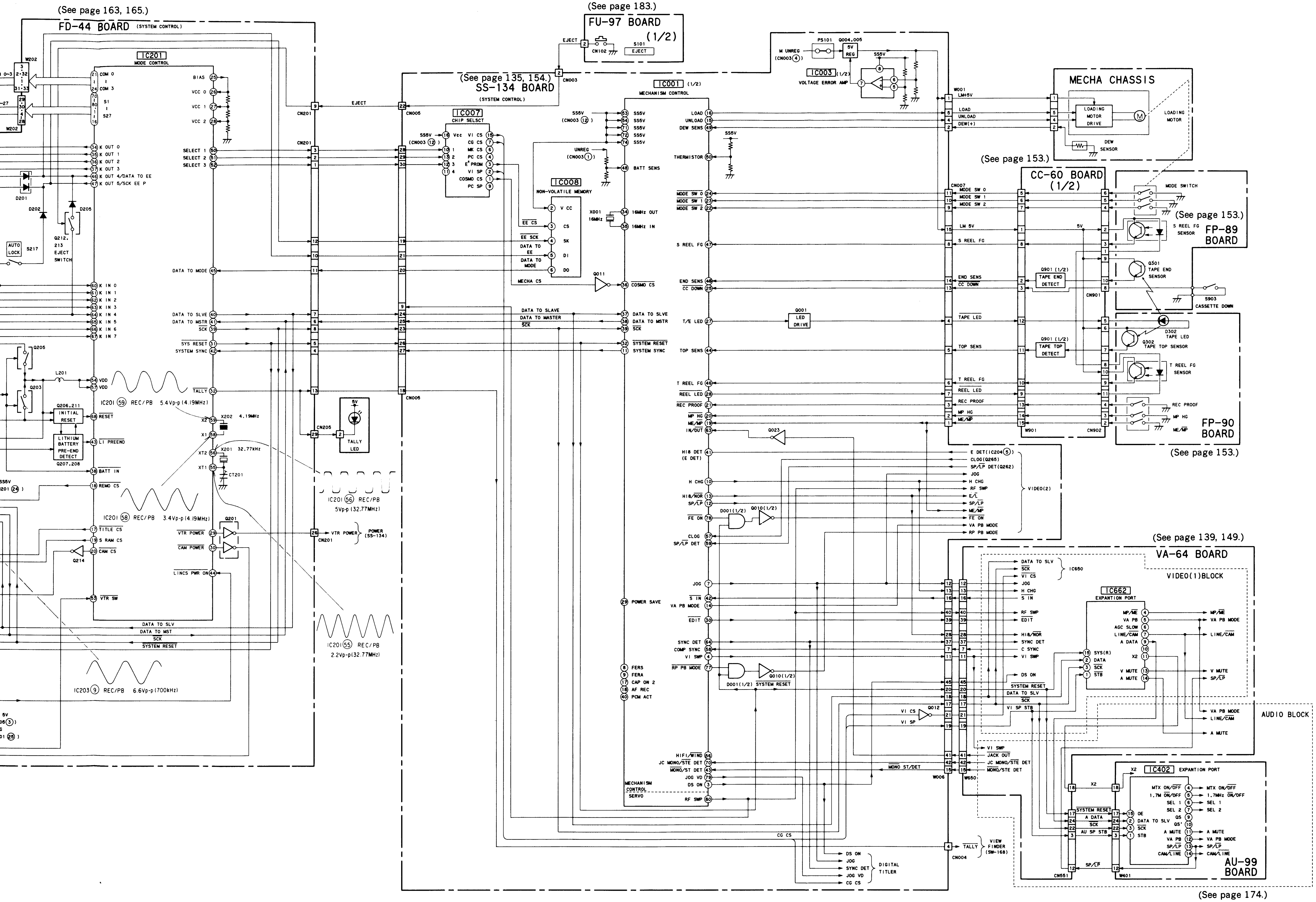


SS-134 BOARD
(See page 135, 154.)
HR-10 BOARD (22) REC 2V/div 0.1μsec/div
HR-10 BOARD (27) REC 2V/div 0.1μsec/div
IC205
HEAD AMP
EQ
GCA
H CHG
H
L
Q233,234
RF AMP
PB VI RF
RV201
CH1'EQ
FE ON (Q010(1/2))
RF CH1'
RF OUT
RV202
CH1EQ
RV203
CH2EQ
DRUM
VIDEO HEAD
CH1'
CH1
CH2
FRYING ERASE HEAD
CH1'(X)
CH1(X)
CH2(X)
FE (X)
W201 (FP-256)
CN200
CHECK PIN
RF CH1'
RF OUT
RF SWP
IC001
REC/PB AMP
RF CH1
RF IN
Q002
FEEDBACK DUMPING
Q003
FEEDBACK DUMPING
CH1 HEAD AMP
CH1 2ND AMP
CH2 HEAD AMP
CH2 2ND AMP
BUFFER
AMP
6dB ATT
PB VI RF
PB PCM RF
AF REC
Q001
RP PB MODE
PB 5V
RF SWP
REC AREA
REC VI RF
REC PCM RF
CH2
CH1 CHECK
CH1 BIAS
DUMPING
REC AMP
V-I CONV
CH2 REC AMP
V VOL
PCM VOL
PB Vcc
H AMP Vcc
REC AMP Vcc
REC Vcc
RP 5V
REG 5V
VIDEO 5V (CN003 (20))
HR-10 BOARD
TP204
Q202
BUFFER
CH2 CHECK
CH2 BIAS
Q214
AMP
Q215
FRYING ERASE OSC
FE ON
Q213
ERASE CURRENT SWITCH
ME/MP (Q255(1/2))
TP204 REC 0.1V/div 0.1μsec/div
RF SWP (IC001 (80))
HR-10 BOARD (11) PB 0.2V/div 0.1μsec/div
HR-10 BOARD (6) REC/PB 4Vp-p(2V)
HR-10 BOARD (4) REC 50mV/div 0.1μsec/div
Q291
TUNING AMP
Q263(1/2)
PEAK DETECT
REFERENCE VOLTAGE
RF AGC
Q203
BUFFER
CHROMA TRAP
Q258,259
AGC AMP
Q266
AGC DET
Q260,261
AMP
Q267,268
LOWER PEAK DETECT
Q280
BUFFER
PB RF
PB C
PB Y+C
AFM/ATF TRAP
Q218
BUFFER
PB Y
Q219
CHROMA TRAP
RF EQ
Q221
BUFFER
Q223,227
MIDDLE TUNING AMP
Q217
1.7MHz TRAP ON/OFF SWITCH
E/L
IC001 (13)
Q222,224,225
TUNING FREQUENCY SWITCH
L/E (Q256,257)
ME/MP (CN007 (1))
MP/ME (Q255(1/2))
E/L (IC001 (13))
D202
D203
RV207
REC Y
Q254
Q252
Y/C/AFM/ATF MIX AMP
REC Y+C
RV206
REC C
Q248,249
E
L
Q247
REC Y EQ
L/E (Q256,257)


H CHG
GCA
RV201
CH1'EQ
RF CH1'
RF OUT
PB VI RF
Q233,234
RF AMP
Q291
TUNING AMP
Q263(1/2)
PEAK DETECT
Q263(1/2)
REFERENCE VOLTAGE
IC202 (1/2)
COMPARATOR
INTEGRATOR
Q265
CLOG DETECT
CLOG
SP/LP DET
E DET
SYSTEM CONTROL
RF AGC
Q203
BUFFER
CHROMA TRAP
Q258,259
AGC AMP
Q266
AGC DET
Q260,261
AMP
Q267,268
LOWER PEAK DETECT
Q269(1/2)
BUFFER
Q269(1/2),279
REFERENCE VOLTAGE
IC202 (1/2)
COMPARATOR
INTEGRATOR
Q262
SP/LP DETECT
Q279
ME/MP (CN007 ①)
PB RF
REC ATF(Q153)
SERVO
RF IN
Q280
BUFFER
PB RF
PB C
PB Y+C
AFM/ATF TRAP
Q218
BUFFER
PB Y
CHROMA TRAP
Q219
RF EQ
Q221
BUFFER
Q223,227
MIDDLE TUNING AMP
Q217
1.7MHz TRAP ON/OFF SWITCH
E/L
IC001 ⑬
Q222,224,225
TUNING FREQUENCY SWITCH
L/E
(Q256,257)
ME/MP
(CN007 ①)
D202
MP/ME
(Q255(1/2))
E/L
(IC001 ⑬)
D203
Q278
BUFFER
PB AFM RF
REC AFM RF
AUDIO (VA-64)
PB C RF
PB Y RF
Q251
C/AFM/ATF MIX
REC C RF
RV205
REC AFM
Q250,270
GAIN SWITCH
ME/MP (Q255(1/2))
E/L (IC001, ⑬)
IC204 E/L DISCRIMINATOR
EH D4 D3 D2 D1
E DET
INTEG. COUNTER
MAIN COUNTER
RF IN
Q277
BUFFER
VA PB 5V
(Q230)
Vcc
DOP
GATE GEN COUNTER
C SYNC
FSC
4.43MHz
VIDEO(1) (VA-64)
H CHG
PB VI RF
PB VI RF
PB PCM RF
HR-10 BOARD ⑪ PB
0.2V/div
0.1µsec/div
AF REC
RP PB MODE
RF SWP
REC AREA
REC VI RF
REC Y+C
REC PCM RF
HR-10 BOARD ⑥ REC/PB
4Vp-p(2V)
HR-10 BOARD ④ REC
50mV/div
0.1µsec/div
HR-10 BOARD
RV207
REC Y
Q254
Q252
Y/C/AFM/ATF MIX AMP
RV206
REC C
Q248,249
E
L
Q247
REC Y EQ
L/E
(Q256,257)
OTL
Q295
BUFFER
IC201 (1/2)
LIMITER
Q245
BUFFER
IC201 (1/2)
LIMITER
LIMITER
Q244
BUFFER
LPF
Q242
BUFFER
Q238
CHROMA AFM BAND TRAP
Q243
CUT-OFF FREQUENCY SWITCH
L/E
(Q256,257)
Q239
L/E SWITCH
E/L
(IC001 ⑬)
REC Y RF
OTL CONT
W006
Q230,232
VA PB 5V
VIDEO 5V
(CN003 ⑳)
Q240
Q272,273
REC 5V
VA PB MODE (IC001 ⑭)
E/L
E/L (IC001 ⑬)
Q256,257
L/E
ME/MP
ME/MP (CN007 ①)
Q255(1/2)
MP/ME
Q255(1/2)
ME/MP
SYSTEM CONTROL
Q229,231
RP PB MODE(Q010(1/2))
RP PB 5V
VIDEO 5V
(CN003 ⑳)
H CHG (IC001 ⑩)
FE ON
FE ON (Q010(1/2))
RF SWP
(IC001 (80))
⑳

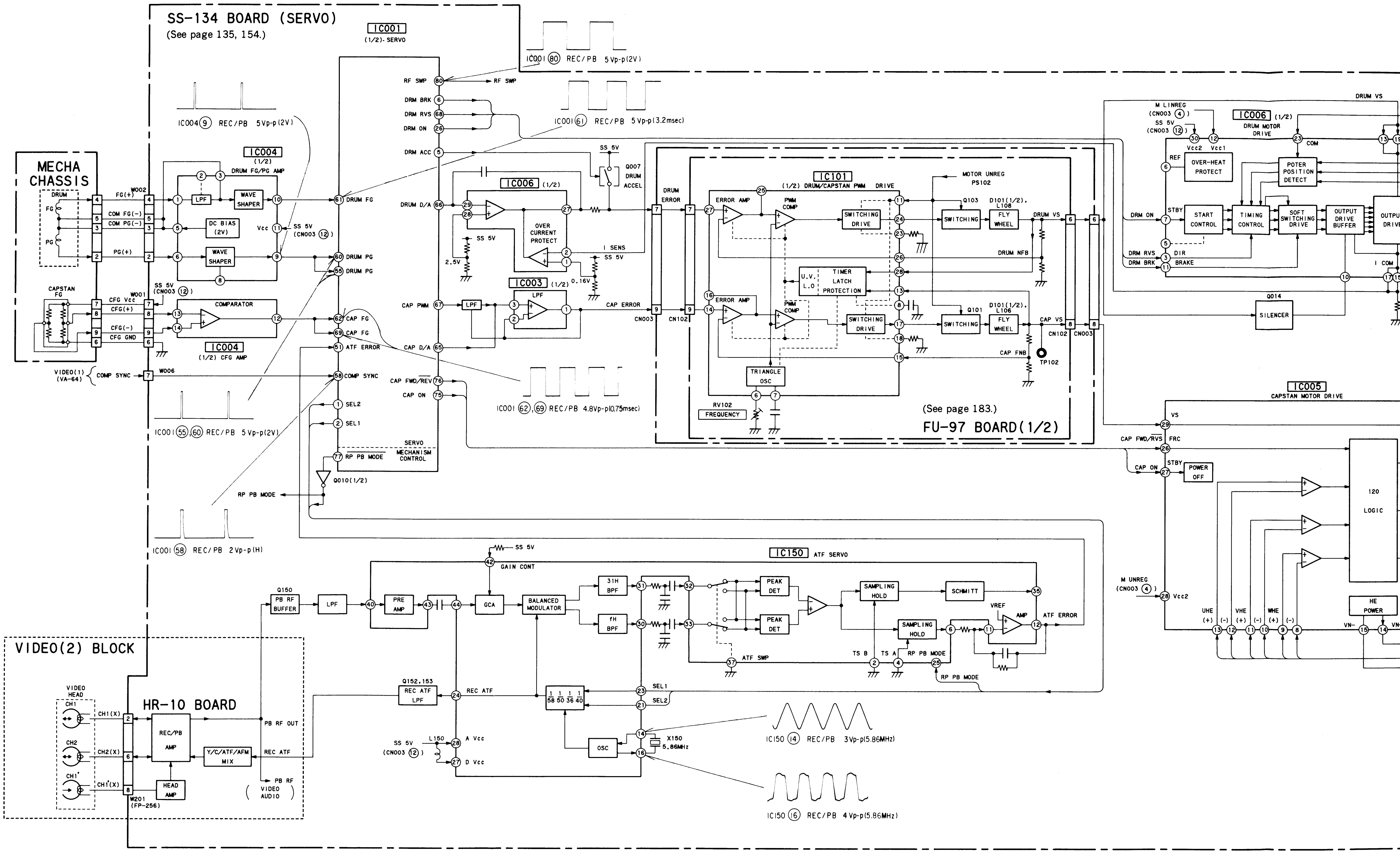
3-9. SYSTEM CONTROL BLOCK DIAGRAM

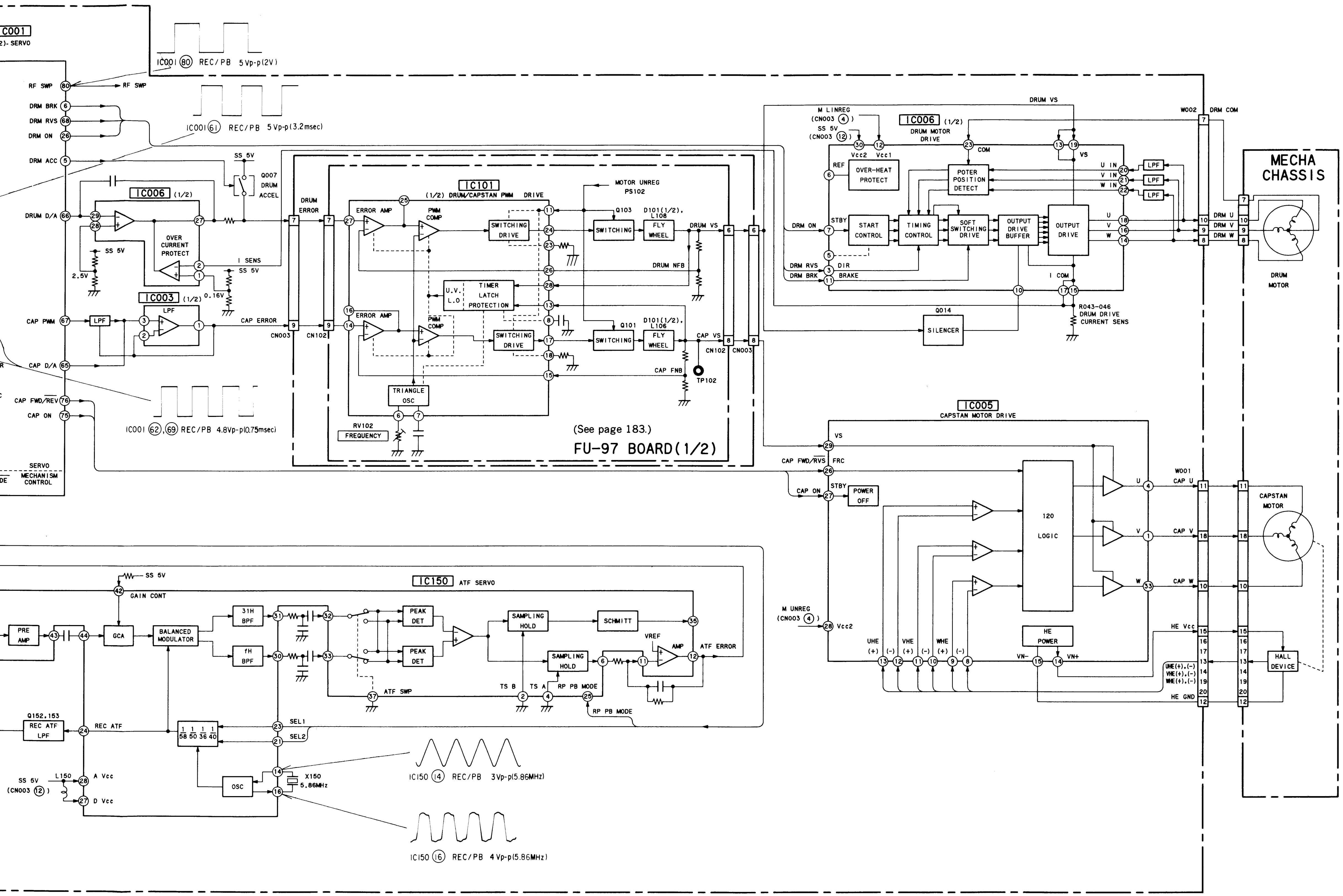

(See page 163, 165.)
FD-44 BOARD (SYSTEM CONTROL)
IC201 MODE CONTROL
LIQUID CRYSTAL DISPLAY
W202
COM 0-3
S1-27
BIAS
VCC 0
VCC 1
VCC 2
SELECT 1
SELECT 2
SELECT 3
K OUT 0
K OUT 1
K OUT 2
K OUT 3
K OUT 4/DATA TO EE
K OUT 5/SCK EE P
D201
D202
D205
Q212, 213 EJECT SWITCH
AUTO LOCK
S217
DATA TO MODE
K IN 0
K IN 1
K IN 2
K IN 3
K IN 4
K IN 5
K IN 6
K IN 7
DATA TO SLVE
DATA TO MSTR
SCK
SYS RESET
SYSTEM SYNC
TALLY
FK-47 BOARD
(See page 162.)
CN501
S510
S513 FF
S512 DATA SCREEN
S511
S517 EDIT+
S516 REW
S515
S514
S518 EDIT-
S503
S501 MENU
S505
S507 EXEC
S506 PAUSE
S502 SLOW
S504
S509 POWER VTR OFF CAMERA
CN205
S210 (1/2) UP
S211 EXPOSURE
S210 (1/2) DOWN
S215 SHUTTER
S212 AE
S213 FADER
S209 WB
S216
S201 RESET
S206 DATE
S207 TIME
S208 ZERO MEM
S202 TITLE 1
S203 TITLE 2
S204 MEMORY
S205 COLOR
REMOTE CONTROL RECEIVER
SIRCS SIG
S603 START/STOP
SW-168 BOARD(1/3)
(See page 173.)
CN701
S702 START/STOP
S701 STANDBY OFF ON
J702 REMOTE
LANC DC
LANC SIG
CN204
LI 3V
IC206 EVER 5V DETECT
Q204
IC205 EVER 5V REG
UNREG (CN201 25)
EVER 5V
EVER DC
Q205
Q203
L201
Q206,211 INITIAL RESET
LITHIUM BATTERY PRE-END DETECT Q207,208
VDD
RESET
LI PREEND
BATT IN
REMO CS
IC201 59 REC/PB 5.4Vp-p (4.19MHz)
X202 4.19MHz
X201 32.77kHz
CT201
IC203 SIRCS CONTROL
SIN
CL1
CL2
RST
VA PB MODE
SO
SI
S5SV (CN201 24)
X203 700KHz
Q202
Q214
TITLE CS
S RAM CS
CAM CS
IC201 58 REC/PB 3.4Vp-p (4.19MHz)
Q201
VTR POWER
CAM POWER
LINCS PWR ON
VTR SW
IC201 56 REC/PB 5Vp-p (32.77MHz)
IC201 55 REC/PB 2.2Vp-p (32.77MHz)
IC203 9 REC/PB 6.6Vp-p (700kHz)
S602 FOCUS
W602
W604
J603 LITHIUM BATTERY
CN202
(See page 163.)
FA-2 BOARD
LI-33 BOARD
(See page 163.)
DIGITAL TITLER
DATA TO SLV
DATA TO MST
CAMERA(2) (VC-86)
CAM CS
SYSTEM RESET
Q210
Q209(1/2)
IC202 LANC I/O
LANC DC
LANC OUT
DATA IN
DATA OUT
WAKE UP
PWR CONT
EVER 5V (IC205 3)
UNREG (CN201 25)
CAM TO LANC
LANC TO CAM
EVR TO LANC
LANC TO EVR
POWER (VC-86)
CAM POWER
CN201
EJECT
(See page 183.)
FU-97 BOARD (1/2)
S101 EJECT
CN102
(See page 135, 154.)
SS-134 BOARD (SYSTEM CONTROL)
CN003
CN005
IC007 CHIP SELSCT
IC008 NON-VOLATILE MEMORY
EE CS
EE SCK
DATA TO EE
DATA TO MODE
MECHA CS
X001 16MHz
Q011
COSMO CS
DATA TO SLAVE
DATA TO MASTER
SYSTEM RESET
SYSTEM SYNC
CN205
TALLY LED
VTR POWER (SS-134)
IC001 (1/2) MECHANISM CONTROL
LOAD
UNLOAD
DEW SENS
THERMISTOR
BATT SENS
16MHz OUT
16MHz IN
MODE SW 0
MODE SW 1
MODE SW 2
S REEL FG
END SENS
CC DOWN
T/E LED
Q001 LED DRIVE
TOP SENS
T REEL FG
REEL LED
REC PROOF
MP HG
ME/MP
IN/OUT
Q023
HI8 DET (E DET)
H CHG
HI8/NOR
SP/LP
D001(1/2)
Q010(1/2)
FE ON
CLOG
SP/LP DET
JOG
S IN
VA PB MODE
EDIT
POWER SAVE
SYNC DET
COMP SYNC
VI SWP
RP PB MODE
FERS
FERA
CAP ON 2
AF REC
PCM ACT
HIFI/WIND
JC MONO/STE DET
MONO/ST DET
JOG VD
DS ON
RF SWP
MECHANISM CONTROL SERVO
CG CS
DS ON
JOG
SYNC DET
JOG VD
CG CS
DIGITAL TITLER
PS101
Q004,005 5V REG
M UNREG (CN003 4)
IC003 (1/2) VOLTAGE ERROR AMP
S5SV



(See page 163, 165.)
FD-44 BOARD (SYSTEM CONTROL)
IC201 MODE CONTROL
W202
D201
D202
D205
Q212, 213 EJECT SWITCH
AUTO LOCK
S217
Q205
L201
Q203
Q206,211 INITIAL RESET
LITHIUM BATTERY PRE-END DETECT
Q207,208
Q214
X202 4.19MHz
X201 32.77kHz
CT201
Q201
IC201 59 REC/PB 5.4Vp-p(4.19MHz)
IC201 58 REC/PB 3.4Vp-p(4.19MHz)
IC201 56 REC/PB 5Vp-p(32.77MHz)
IC201 55 REC/PB 2.2Vp-p(32.77MHz)
IC203 9 REC/PB 6.6Vp-p(700kHz)
DATA TO SLV
DATA TO MST
SCK
SYSTEM RESET
VTR POWER
CAM POWER
LINCS PWR ON
TALLY
CN201
CN205
TALLY LED
VTR POWER (SS-134)
(See page 183.)
FU-97 BOARD (1/2)
S101 EJECT
CN102
EJECT
(See page 135, 154.)
SS-134 BOARD (SYSTEM CONTROL)
CN003
CN005
IC007 CHIP SELSCT
IC008 NON-VOLATILE MEMORY
Q011
IC001 (1/2) MECHANISM CONTROL
X001 16MHz
PS101
Q004,005
5V REG
IC003 (1/2) VOLTAGE ERROR AMP
M UNREG
Q001 LED DRIVE
Q023
D001(1/2)
Q010(1/2)
SYSTEM RESET
Q012
MECHANISM CONTROL SERVO
W001
W006
CN004
TALLY VIEW FINDER (SW-168)
DS ON
JOG
SYNC DET
JOG VD
CG CS
DIGITAL TITLER
VIDEO(2)
MECHA CHASSIS
LOADING MOTOR DRIVE
LOADING MOTOR
DEW SENSOR
(See page 153.)
CC-60 BOARD (1/2)
CN007
Q901 (1/2) TAPE END DETECT
Q901 (1/2) TAPE TOP DETECT
CN901
CN902
W901
MODE SWITCH
S REEL FG SENSOR
(See page 153.)
FP-89 BOARD
Q301 TAPE END SENSOR
S903 CASSETTE DOWN
D302 TAPE LED
Q302 TAPE TOP SENSOR
T REEL FG SENSOR
REC PROOF
MP HG
ME/MP
FP-90 BOARD
(See page 153.)
(See page 139, 149.)
VA-64 BOARD
VIDEO(1)BLOCK
IC650
IC662 EXPANTION PORT
W650
AUDIO BLOCK
IC402 EXPANTION PORT
AU-99 BOARD
CN551
W401
(See page 174.)

3-10. SERVO BLOCK DIAGRAM


SS-134 BOARD (SERVO)
(See page 135, 154.)
IC001
(1/2)- SERVO
IC001 (80) REC/PB 5Vp-p(2V)
RF SWP
DRM BRK
DRM RVS
DRM ON
DRM ACC
IC001 (61) REC/PB 5Vp-p(3.2msec)
IC004 (9) REC/PB 5Vp-p(2V)
MECHA CHASSIS
DRUM
FG
PG
W002
FG(+)
COM FG(−)
COM PG(−)
PG(+)
IC004
(1/2)
DRUM FG/PG AMP
LPF
WAVE SHAPER
DC BIAS (2V)
WAVE SHAPER
Vcc
SS 5V (CN003 (12))
DRUM FG
DRUM PG
DRUM PG
DRUM D/A
SS 5V
2.5V
IC006 (1/2)
OVER CURRENT PROTECT
SS 5V
Q007
DRUM ACCEL
I SENS
SS 5V
0.16V
IC003 (1/2)
LPF
CAP ERROR
CAP PWM
LPF
CAP D/A
CAPSTAN FG
W001
SS 5V (CN003 (12))
CFG Vcc
CFG(+)
CFG(−)
CFG GND
COMPARATOR
IC004
(1/2) CFG AMP
CAP FG
CAP FG
ATF ERROR
VIDEO(1) (VA-64)
COMP SYNC
W006
COMP SYNC
SEL2
SEL1
SERVO MECHANISM CONTROL
RP PB MODE
Q010(1/2)
RP PB MODE
CAP FWD/REV
CAP ON
IC001 (62),(69) REC/PB 4.8Vp-p(0.75msec)
IC001 (55),(60) REC/PB 5Vp-p(2V)
IC001 (58) REC/PB 2Vp-p(H)
DRUM ERROR
CN003
CN102
IC101
(1/2) DRUM/CAPSTAN PWM DRIVE
ERROR AMP
PWM COMP
SWITCHING DRIVE
MOTOR UNREG PS102
Q103
SWITCHING
D101(1/2), L108
FLY WHEEL
DRUM VS
DRUM NFB
U.V. L.O
TIMER LATCH PROTECTION
ERROR AMP
PWM COMP
SWITCHING DRIVE
Q101
SWITCHING
D101(1/2), L106
FLY WHEEL
CAP VS
CAP FNB
TP102
CN102
CN003
TRIANGLE OSC
RV102 FREQUENCY
(See page 183.)
FU-97 BOARD(1/2)
DRUM VS
M LINREG (CN003 (4))
SS 5V (CN003 (12))
IC006 (1/2)
DRUM MOTOR DRIVE
Vcc2 Vcc1
COM
REF
OVER-HEAT PROTECT
POTER POSITION DETECT
DRM ON
STBY
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPU DRIVE
DRM RVS
DRM BRK
DIR
BRAKE
I COM
Q014
SILENCER
IC005
CAPSTAN MOTOR DRIVE
VS
CAP FWD/RVS
FRC
STBY
CAP ON
POWER OFF
120
LOGIC
M UNREG (CN003 (4))
Vcc2
HE POWER
UHE (+) (−)
VHE (+) (−)
WHE (+) (−)
VN−
VN
SS 5V
GAIN CONT
IC150 ATF SERVO
Q150
PB RF BUFFER
LPF
PRE AMP
GCA
BALANCED MODULATOR
31H BPF
fH BPF
PEAK DET
PEAK DET
SAMPLING HOLD
SCHMITT
SAMPLING HOLD
VREF
AMP
ATF ERROR
ATF SWP
TS B
TS A
RP PB MODE
RP PB MODE
VIDEO(2) BLOCK
VIDEO HEAD
CH1
CH2
CH1'
CH1(X)
CH2(X)
CH1'(X)
HR-10 BOARD
REC/PB AMP
Y/C/ATF/AFM MIX
HEAD AMP
W201 (FP-256)
PB RF OUT
REC ATF
PB RF
(VIDEO AUDIO)
Q152,153
REC ATF LPF
REC ATF
SEL1
SEL2
1/58 1/50 1/36 1/40
SS 5V (CN003 (12))
L150
A Vcc
D Vcc
OSC
X150 5.86MHz
IC150 (14) REC/PB 3Vp-p(5.86MHz)
IC150 (16) REC/PB 4Vp-p(5.86MHz)


IC001
2)-SERVO
IC001 (80) REC/PB 5Vp-p(2V)
RF SWP
DRM BRK
DRM RVS
DRM ON
DRM ACC
IC001 (61) REC/PB 5Vp-p(3.2msec)
SS 5V
Q007
DRUM
ACCEL
IC006 (1/2)
DRUM D/A
OVER CURRENT PROTECT
SS 5V
2.5V
I SENS
0.16V
IC003 (1/2)
LPF
CAP PWM
CAP ERROR
CAP D/A
CAP FWD/REV
CAP ON
IC001 (62),(69) REC/PB 4.8Vp-p(0.75msec)
SERVO
MECHANISM CONTROL
DRUM ERROR
CN003
CN102
IC101
(1/2) DRUM/CAPSTAN PWM DRIVE
MOTOR UNREG
PS102
ERROR AMP
PWM COMP
SWITCHING DRIVE
Q103
D101(1/2), L108
SWITCHING
FLY WHEEL
DRUM VS
DRUM NFB
U.V. L.O
TIMER LATCH PROTECTION
Q101
D101(1/2), L106
CAP VS
CAP FNB
TP102
TRIANGLE OSC
RV102
FREQUENCY
(See page 183.)
FU-97 BOARD(1/2)
DRUM VS
M LINREG (CN003 (4))
SS 5V (CN003 (12))
IC006 (1/2)
DRUM MOTOR DRIVE
Vcc2 Vcc1
COM
VS
REF
OVER-HEAT PROTECT
POTER POSITION DETECT
U IN
V IN
W IN
LPF
STBY
DRM ON
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
U
V
W
DRM RVS
DRM BRK
DIR
BRAKE
I COM
Q014
SILENCER
R043-046
DRUM DRIVE CURRENT SENS
W002
DRM COM
DRM U
DRM V
DRM W
MECHA CHASSIS
DRUM MOTOR
IC005
CAPSTAN MOTOR DRIVE
VS
CAP FWD/RVS
FRC
CAP ON
POWER OFF
120 LOGIC
W001
CAP U
CAP V
CAP W
CAPSTAN MOTOR
M UNREG (CN003 (4))
Vcc2
HE POWER
UHE (+) (-)
VHE (+) (-)
WHE (+) (-)
VN-
VN+
HE Vcc
UHE(+),(-)
VHE(+),(-)
WHE(+),(-)
HE GND
HALL DEVICE
SS 5V
GAIN CONT
IC150 ATF SERVO
PRE AMP
GCA
BALANCED MODULATOR
31H BPF
fH BPF
PEAK DET
SAMPLING HOLD
SCHMITT
VREF
AMP
ATF ERROR
ATF SWP
TS B
TS A
RP PB MODE
Q152,153
REC ATF LPF
REC ATF
1/58 1/50 1/36 1/40
SEL1
SEL2
SS 5V (CN003 (12))
L150
A Vcc
D Vcc
OSC
X150 5.86MHz
IC150 (14) REC/PB 3Vp-p(5.86MHz)
IC150 (16) REC/PB 4Vp-p(5.86MHz)

3-11. SERVO, SYSTEM CONTROL SYSTEM TERMINAL FUNCTION SS-134 BOARD IC001 (CXP-80116)

PIN No.	Signal Name	I/O	Function	Connection
1	SEL2	O	ATF REF PILOT signal frequency control ATF REF PILOT f_1 f_2 f_3 f_4 SEL 1 H L H L SEL 2 H H L L	ATF IC CXA1204Q
2	SEL1	O		
3	DS ON	O	Data Screen ON/OFF control. Data Screen On and Data Screen key are selected with "H"	IC101 ㉒
4	VI SWP	O	RF SWP using for Vidoe system Normally, same as RF SWP. When using 'CH only "H" 3Head is used.	VIDEO block
5	DRM ACC	O	DRUM motor acceleration signal Acceleration is selected with "H"	To Drum motor driver CXA8006M
6	DRM BRK	O	DRUM motor brake signal Brake is selected with "H"	To Drum motor driver CXA8006M
7	JOG	O	Normal/JOG mode recognition signal JOG is selected with "H"	R/P Amp VIDEO block
8	FE RS	—	Not used	——
9	FE RA	—		
10	H CHG	O	2CH or 'CH select signal 'CH is selected with "H" Only 3Head is used	VIDEO system R/P Amp
11	SYSTEM SYNC	O	Internal bus communication synchronizing signal (V synchronization)	Mode controller
12	SP/$\overline{\text{LP}}$	O	SP/LP mode recognition signal SP mode is selected with "H"	R/P Amp VIDEO/AUDIO block
13	$\overline{\text{NOR}}$/Hi8	O	Hi8/NOR mode output	VIDEO block
14	VA PB MODE	O	VIDEO/AUDIO system REC/PB mode select PB mode is selected with "H"	VIDEO/AUDIO block
15	UNLOAD	O	Loading motor control signal OFF LOADING UNLOADING BRAKE LOAD L H L H UNLOAD L L H H	TO loading motor
16	LOAD	O		
17	CAP ON2	—	Not used	——
18	AF REC	—	Not used	——
19	ME/$\overline{\text{MP}}$	I	ME/MP tape recognition input ME tape is selected with "H"	To CC board
20	$\overline{\text{MP HG}}$	I	MP HG tape recognition input MPHG is selected with "L"	To CC board
21	$\overline{\text{REC PROOF SW}}$	I	REC PROOF recognition input REC PROOF is selected with "L"	To CC board
22	$\overline{\text{MODE SW2}}$	I	Mechanical position input	To CC board
23	$\overline{\text{MODE SW1}}$	I		
24	$\overline{\text{MODE SW0}}$	I		
25	$\overline{\text{CC DOWN}}$	I	Cassette IN switch input Cassette IN is selected with "L"	To CC board
26	DRM ON	O	Drum motor drive control Motor Drive is selected with "H"	To Drum motor driver CXA8006M
27	T/E LED	O	LED for tape top end sensor drive control LED Flashing is selected with "H"	To CC board
28	$\overline{\text{REEL LED}}$	O	LED for reel sensor drive control LED Flashing is selected with "L"	To CC board

PIN No.	Signal Name	I/O	Function	Connection
29	POWER SAVE	O	Marker block POWER SAVE control signal	——
30	$\overline{\text{EDIT}}$	O	EDIT ON/OFF control EDIT is selected with "L"and interlocked with EDIT key.	To VIDEO block
31	SS GND	—	—	——
32	$\overline{\text{SYSTEM}}$ $\overline{\text{RESET}}$	I	Control by mode controller with RESET terminal of this microcomputer RESET is selected "L"	Mode controller and others
33	SS GND	—	—	——
34	16M OUT	O	Crystal connecting terminal for system clock oscillation (16 MHz)	X'tal (X001)
35	16M IN	I		
36	$\overline{\text{COSMO CS}}$	I	Select signal of this microcomputer from internal bus communication mode controller Selected with "L"	Mode controller
37	DATA TO SLVE	I	Serial data input terminal	Mode controller
38	DATA TO MSTR	O	Serial data output terminal	Mode controller
39	$\overline{\text{SCK}}$	I	Serial clock input terminal	Mode controller
40	PCM ACT	—	Not used	——
41	Hi8 DET	I	Hi8 with Hi8/NOR distinction input "H" when playing back	IC204 (CXA2017)
42	S IN	I	Distinction input of the S terminal connection	VIDEO block
43	$\overline{\text{MONO}}$/ST DET	I	AFM monaural/stereo recognition input Stereo is selected "H" (Only stereo correspondence model)	To AUDIO block
44	TOP SENS	I	Tape top end sensor input TOP is selected with "H"	To CC board
45	END SENS	I	END is selected with "H"	
46	T REEL FG	I	Reel sensor input Take up side	To CC board
47	S REEL FG	I	Reel sensor input Supply side	
48	BATT SENS	I	Battery input voltage sense	——
49	DEW SENS	I	DEW SENSOR input	DEW SENSOR, To CC board
50	THERMISTOR	I	THERMISTOR input (This model : fixed value)	
51	ATF ERROR	I	ATF error (ATF LOCK error) input, A/D input terminal	IC105 (CXA1204Q)⑫
52	SS GND	—	—	——
53 54	SS 4.9V		Power source supply terminal	
55	DRM PG	I	DRUM PG input, FRC (high precision timer) capture input terminal	IC502 ⑨
56	$\overline{\text{HiFi}}$/WIND	I	Not used	——
57	CLOG	I	Clog detection signal input. CLOG is selected with "H"	Q265 ©
58	COMP SYNC	I	Composite trunk (composite synchronizing signal) input. (built-in V SYNC separator)	To V IDEO block
59	SP/$\overline{\text{LP}}$ DET	I	SP/LP recognition signal input	Q262 ©
60	DRM PG	—	—	——
61	DRM FG	I	DRUM FG input terminal, FRC capture input terminal	IC004 ⑩ Sense Amplifier

PIN No.	Signal Name	I/O	Function	Connection
62	CAP FG	I	CAPSTAN FG input terminal, FRC capture input terminal	IC502⑫ Sense amplifier
63	IN/$\overline{\text{OUT}}$	O	Input-output selecting switch control signal	VIDEO biock
64	SYNC DET	I	With/Without VIDEO signal recognition signal input	To VIDEO block
65	CAP D/A	O	DA gate pulse output terminal for CAP ERROR output, Servo exclusive output terminal (DA mode)	To capstan lowpass filter
66	DRM D/A	O	DA gate pulse output terminal for DRUM ERROR output, Servo exclusive output terminal (DA mode)	To drum lowpass filter
67	CAP PWM	O	PWM output terminal for CAP ERROR output, Servo excluseive output terminal (PWM mode)	Capstan driver IC503
68	DRM RVS	O	DRUM rotating direction control signal RVS is selected with "H" FWD is selected with "L"	IC006 ③
69	CAP FG	I	External event input terminal to CAP FG input terminal exclusive counter for TAPE COUNTER drive	IC004⑫ sense amplifier
70	MIC JACK MONO/$\overline{\text{ST}}$	I	External MIC Monaural/stereo recognition signal. Monaural is selected with "H"	To AUDIO block
71 72	SS 4.9V			
73	SS GND	—	—	——
74	—	—	Not used	——
75	CAP ON	O	Capstan driver ON control signal	IC005⑬ Capstan driver
76	CAP FWD/$\overline{\text{REV}}$	O	Capstan rotaing direction control signal, FWD is selected with "H", RVS is selected with "L"	IC005⑳ Capstan driver
77	$\overline{\text{RP PB MODE}}$	O	REC/PB mode select signal of RP amplifier and ATF IC	Q010 Ⓑ
78	FE ON	O	Flying erase oscillation ON/OFF signal. Oscillation is selected with "H"	To RP AMP.
79	JOG VD	O	Artificial VD output terminal input to VIDEO signal in varying speed playback	To VIDEO block
80	RF SWP	O	RF SWP output temrinal	RP block VIDEO/AUDIO block

Decoder port for the chip cell allocation list (TC4028)

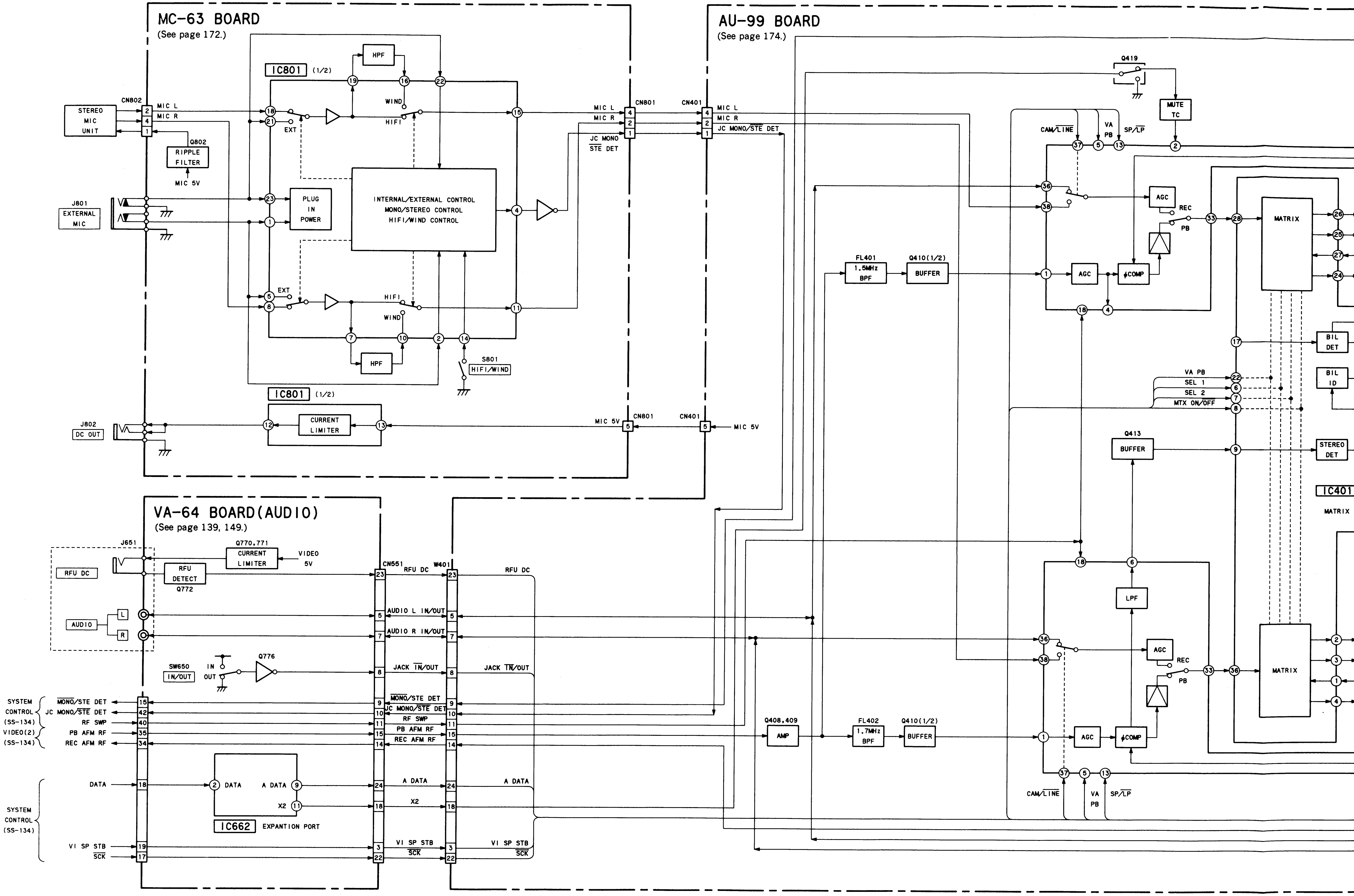
No.	Port name	Port allocation name
3	Q0	E^2-ROM CS
14	Q1	
2	Q2	VA S/P STB
15	Q3	Φ II SR CS
1	Q4	COSMO CS
6	Q5	—
7	Q6	CG STB
4	Q7	PCM CS
9	Q8	PCM S/P STB
5	Q9	—

3-12. MODE CONTROL SYSTEM TERMINAL FUNCTION FD-44 BOARD IC201 (μPD75316)

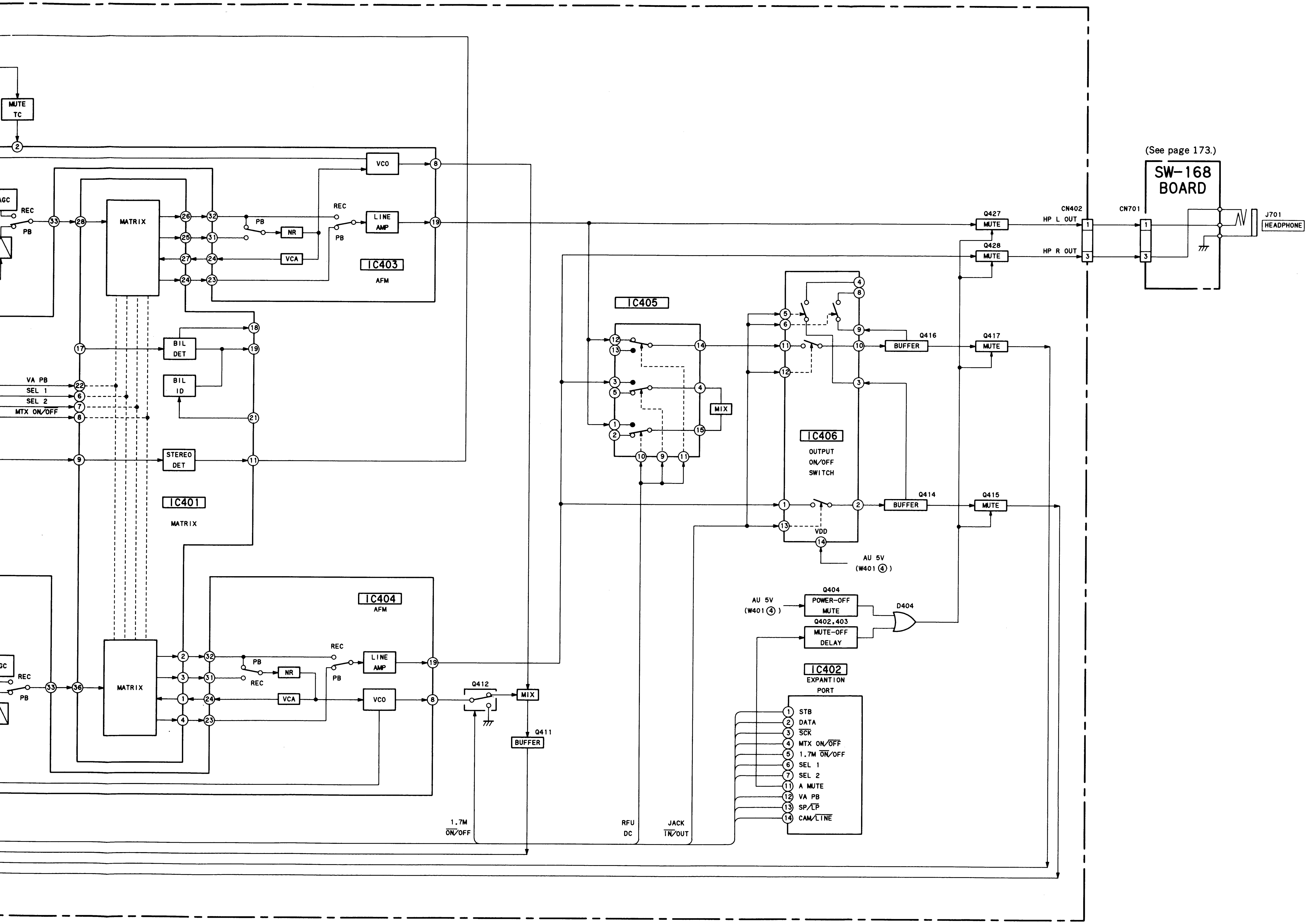
Pin No.	Port name	Port allocation name	I/O	The another connection	Function•Remarks
1	S12		O	LCD	Segment signal output terminal of the liquid crystal display element (LCD)
2	S13		O	LCD	
3	S14		O	LCD	
4	S15		O	LCD	
5	S16		O	LCD	
6	S17		O	LCD	
7	S18		O	LCD	
8	S19		O	LCD	
9	S20		O	LCD	
10	S21		O	LCD	
11	S22		O	LCD	
12	S23		O	LCD	
13	S24/BP0		O	LCD	
14	S25/BP1		O	LCD	
15	S26/BP2		O	LCD	
16	S27/BP3		O	LCD	
17	S28/BP4	TITL CS	O	FD	Chip selector signal of the standard cell for titler (IC301)
18	S29/BP5	~REMO CS	O	FD	Chip selector signal of the wireless remote control reception microcomputer (IC203)
19	S30/BP6	S RAM CS	O	FD	Chip selector signal of RAM for the titler (IC302)
20	S31/BP7	~CAM CS	O	CAM	Chip selector signal of the camera microcomputer (IC501)
21	COM0			LCD	Remote control signal output terminal of the liquid crystal display element (LCD)
22	COM1			LCD	
23	COM2			LCD	
24	COM3			LCD	
25	BIAS			LCD	Output terminal for dividing resistance cut of the liquid crystal display element (LCD)
26	VLC0			LCD	Power source supply terminal of the liquid crystal display enement (LCD)
27	VLC1			LCD	
28	VLC2			LCD	
29	P40	~VTR POWER	O	FU	Turning ON/OFF signal of the VTR system DC/DC converter
30	P41	~CAM POWER	O	CAM	Turning ON/OFF signal of the CAM system DC/DC converter
31	P42	~SYSTEM RESET	O	ALL	Initializing (reset) signal of each microcomputer or IC
32	P43	~TALLY	O	VF	Tally LED flashing signal
33	VSS				Ground power source
34	P50	K OUT 0	O	FD	Output signal of the key matrix
35	P51	K OUT 1	O	FD	
36	P52	K OUT 2	O	FD	
37	P53	K OUT 3	O	FD	
38	P00/INT4	~BATT IN	I	FD	Signal for the battery or the AC adapter attaching/removing detection

Pin No.	Port name	Port allocation name	I/O	The another connection	Function•Remarks
39	P01/~SCK	~SCK	O/I	ALL	Serial clock for serial communication (This is input only when communicating with camera microcomputer)
40	P02/S0/SB0	DATA TO SLVE	O	ALL	Data output signal for serial communication
41	P03/SI/SB1	DATA TO MSTR	I	ALL	Data input signal for serial communication
42	P10/INT0	SYSTEM SYNC	I	SS	Timing signal for serial communication
43	P11/INT1	~LI PRE END	I	FD	Pre-end detection signal of the lithium battery (Set value is 2.8V or less)
44	P12/INT2	~LINCS PWR ON	I	FD	POWER ON requiring signal of the LANC communication (Power is turned on with L at 140ms or more)
45	P13/TI0	DATA TO MODE	I	SS	Serial communication data input signal of EE-PROM
46	P20/PT00	K OUT4/DATA TO E^2	O	SS	Data output signal of the output signal +EE-PROM of the key matrix
47	P21	K OUT5/~SCK E^2	O	SS	Serial clock signal of the output signal +EE-PROM of the key matrix
48	P22/PCL	K OUT 6	O	FD	Output signal of the key matrix
49	P23/BUZ				
50	P30/LCDCL	SELECT 1	O	SS	Signal for producing chip select
51	P31/SYNC	SELECT 2	O	SS	
52	P32	SELECT 3	O	SS	
53	P33	~VTR SW	I	FD	Forced VTR mode signal (Uned at the place for business)
54	VDD				Positive voltage supplying terminal
55	XT1				Crystal vibrator connecting terminal for clock
56	XT2				
57	NC				
58	X1				Ceramic connecting terminal for the main system clock oscillation
59	X2				
60	P60/KR0	K IN 0	I	FD	Key matrix input signal
61	P61/KR1	K IN 1	I	FD	
62	P62/KR2	K IN 2	I	FD	
63	P63/KR3	K IN 3	I	FD	
64	P70/KR4	K IN 4	I	FD	
65	P71/KR5	K IN 5	I	FD	
66	P72/KR6	K IN 6	I	FD	
67	P73/KR7	K IN 7	I	FD	
68	~RESET	~RESET	I	FD	Reset signal input terminal
69	S0		O	FD	Output 1/64 of the oscillation for clock (32.768kHz/64≒512Hz)
70	S1		O	LCD	
71	S2		O	LCD	
72	S3		O	LCD	
73	S4		O	LCD	
74	S5		O	LCD	
75	S6		O	LCD	
76	S7		O	LCD	
77	S8		O	LCD	
78	S9		O	LCD	
79	S10		O	LCD	
80	S11		O	LCD	

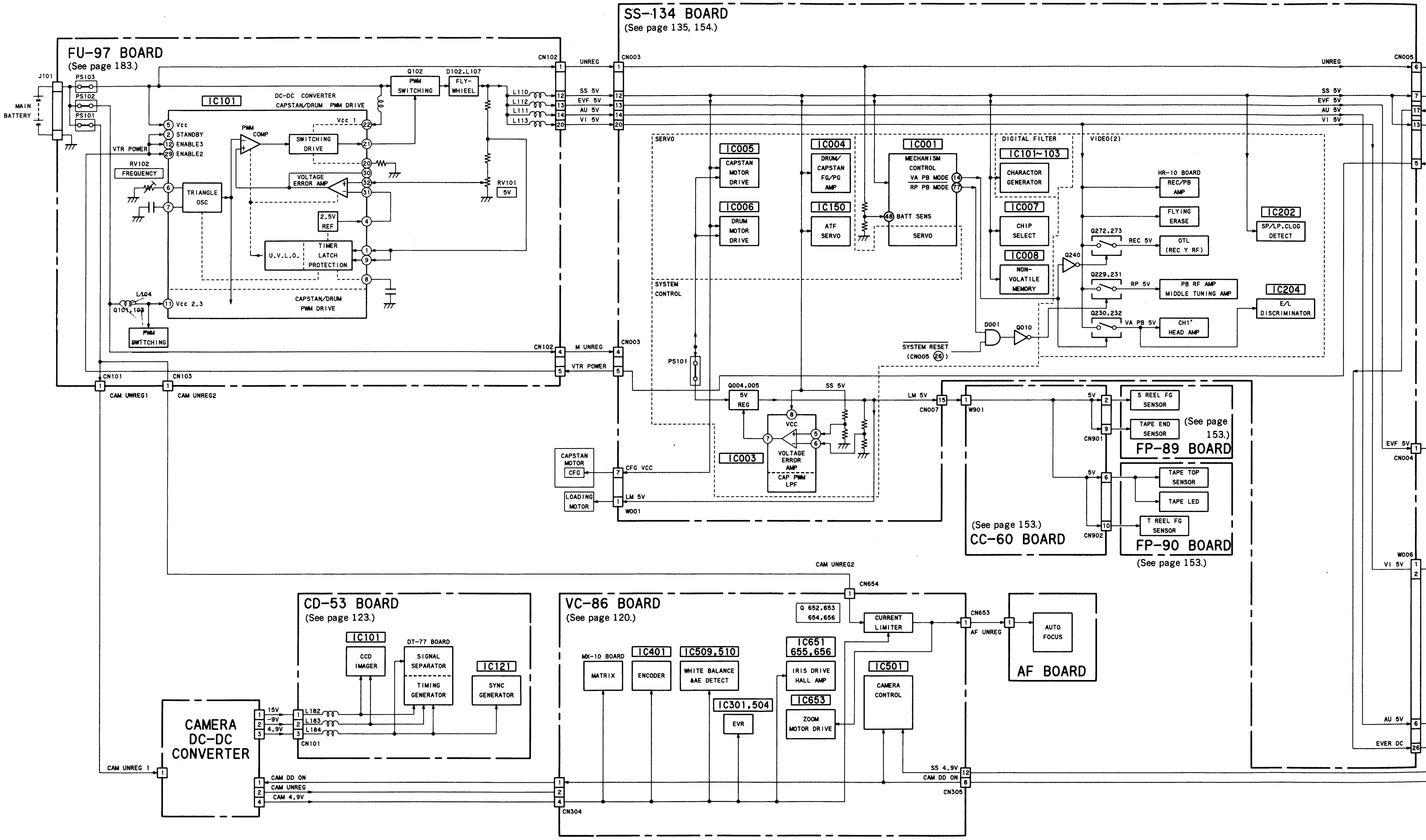
3-13. AUDIO BLOCK DIAGRAM

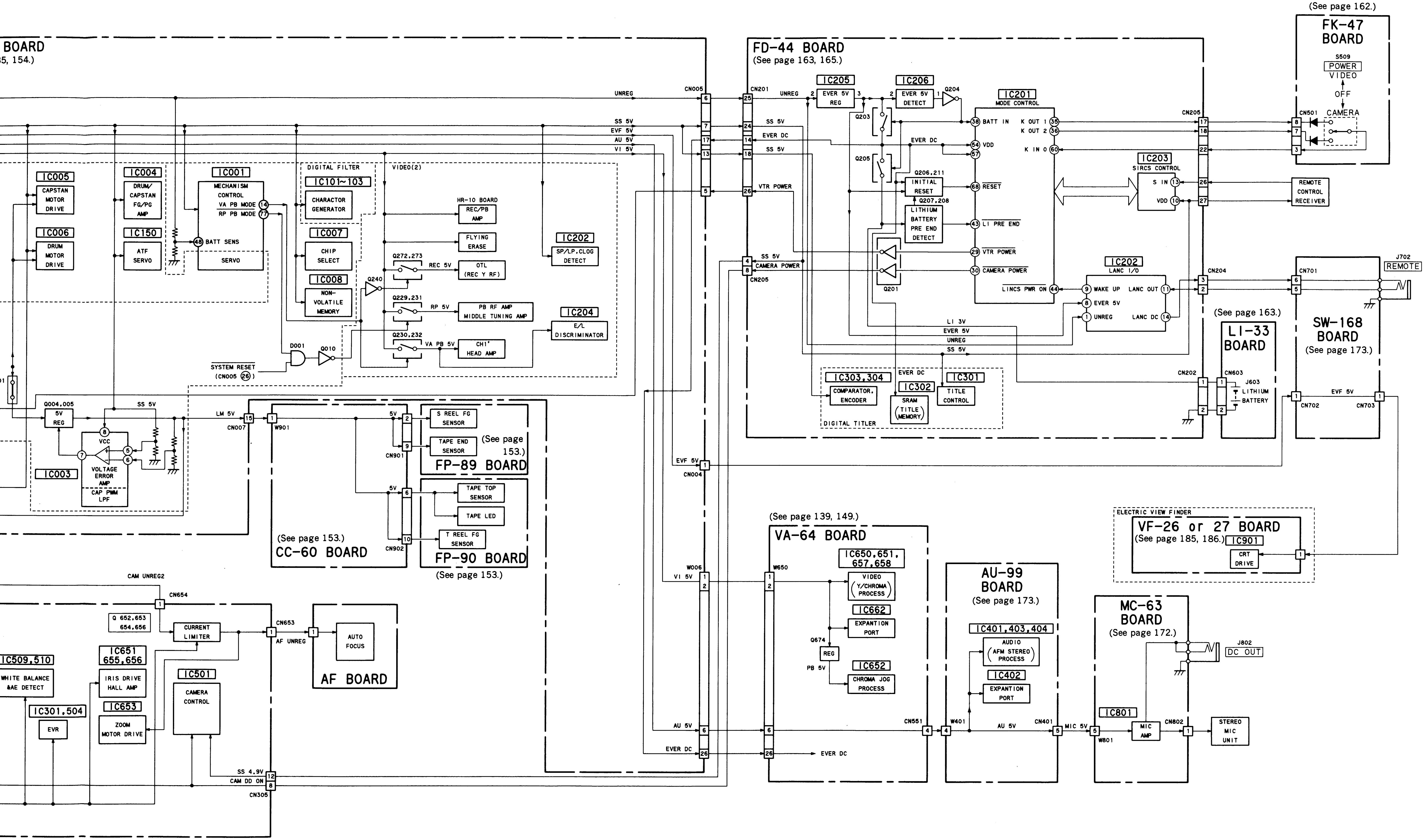


MC-63 BOARD
(See page 172.)
IC801 (1/2)
HPF
WIND
HIFI
EXT
STEREO MIC UNIT
CN802
MIC L
MIC R
Q802
RIPPLE FILTER
MIC 5V
J801
EXTERNAL MIC
PLUG IN POWER
INTERNAL/EXTERNAL CONTROL
MONO/STEREO CONTROL
HIFI/WIND CONTROL
S801
HIFI/WIND
CURRENT LIMITER
J802
DC OUT
CN801
JC MONO
STE DET
MIC 5V
AU-99 BOARD
(See page 174.)
CN401
JC MONO/STE DET
Q419
MUTE TC
CAM/LINE
VA PB
SP/LP
AGC
REC
PB
MATRIX
FL401
1.5MHz BPF
Q410(1/2)
BUFFER
ϕCOMP
BIL DET
BIL ID
SEL 1
SEL 2
MTX ON/OFF
Q413
STEREO DET
IC401
LPF
Q408,409
AMP
FL402
1.7MHz BPF
VA-64 BOARD(AUDIO)
(See page 139, 149.)
J651
RFU DC
RFU DETECT
Q772
Q770,771
CURRENT LIMITER
VIDEO 5V
CN551
W401
AUDIO
L
R
AUDIO L IN/OUT
AUDIO R IN/OUT
SW650
IN/OUT
IN
OUT
Q776
JACK IN/OUT
SYSTEM CONTROL (SS-134)
VIDEO(2) (SS-134)
MONO/STE DET
JC MONO/STE DET
RF SWP
PB AFM RF
REC AFM RF
DATA
A DATA
X2
IC662
EXPANTION PORT
VI SP STB
SCK

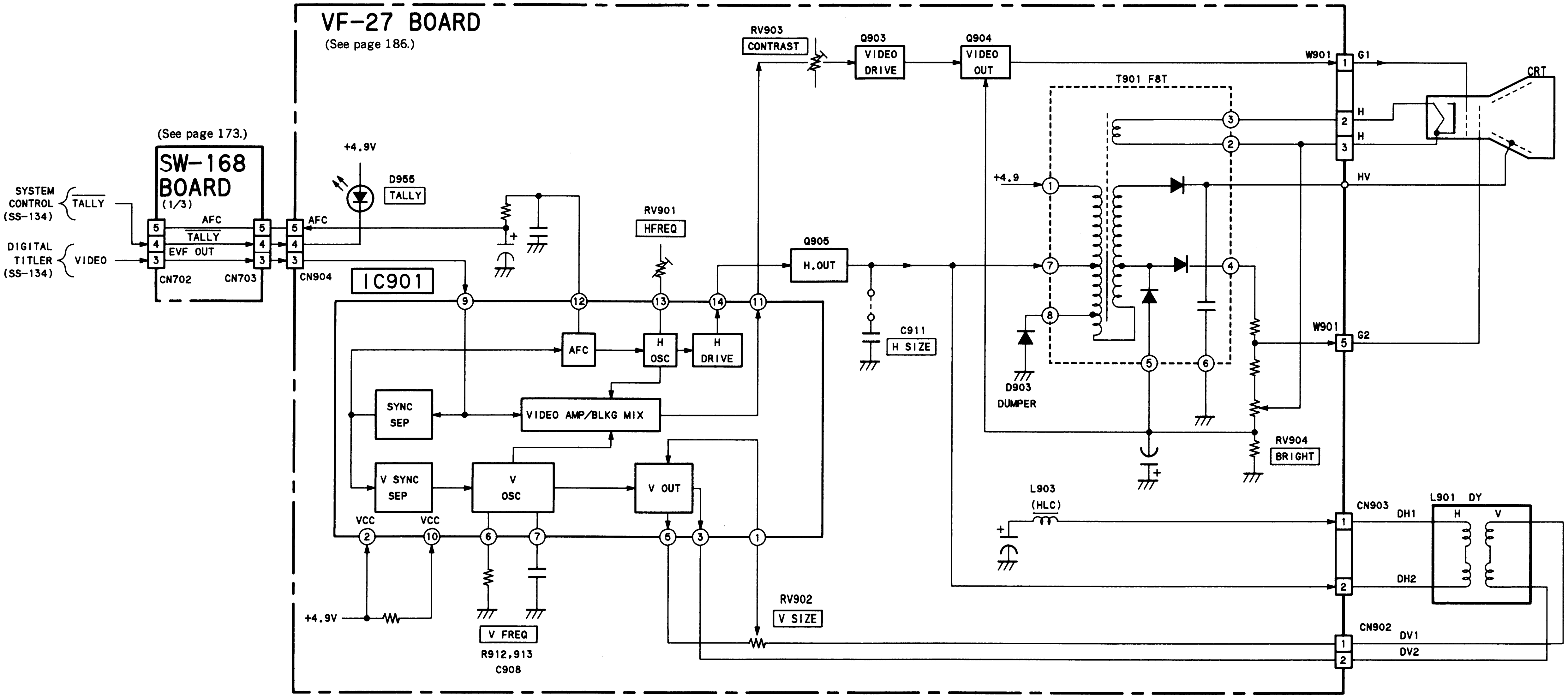

MUTE TC
AGC
REC
PB
MATRIX
VCO
LINE AMP
NR
VCA
REC
PB
IC403
AFM
BIL DET
BIL ID
VA PB
SEL 1
SEL 2
MTX ON/OFF
STEREO DET
IC401
MATRIX
IC404
AFM
MATRIX
LINE AMP
NR
VCA
VCO
Q412
MIX
Q411
BUFFER
1.7M ON/OFF
RFU DC
JACK IN/OUT
IC405
MIX
IC406
OUTPUT ON/OFF SWITCH
VDD
AU 5V (W401 ④)
Q416
BUFFER
Q414
BUFFER
Q417
MUTE
Q415
MUTE
Q427
MUTE
Q428
MUTE
HP L OUT
HP R OUT
CN402
CN701
Q404
POWER-OFF MUTE
Q402,403
MUTE-OFF DELAY
AU 5V (W401 ④)
D404
IC402
EXPANTION PORT
STB
DATA
SCK
MTX ON/OFF
1.7M ON/OFF
SEL 1
SEL 2
A MUTE
VA PB
SP/LP
CAM/LINE
(See page 173.)
SW-168 BOARD
J701
HEADPHONE

3-14. POWER BLOCK DIAGRAM

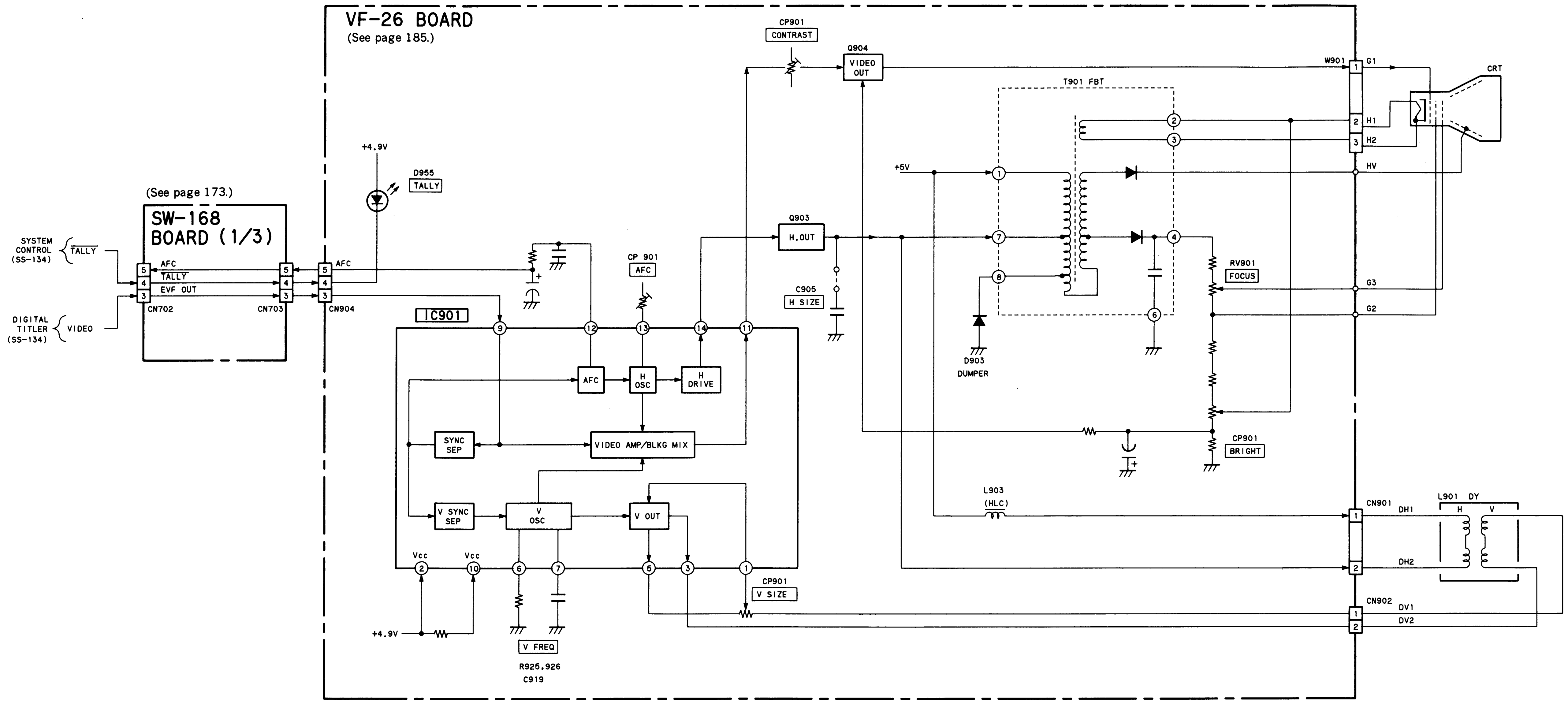

FU-97 BOARD
(See page 183.)
J101
MAIN BATTERY
PS103
PS102
PS101
IC101
DC-DC CONVERTER
CAPSTAN/DRUM PWM DRIVE
Q102
PWM SWITCHING
D102,L107
FLY-WHEEL
Vcc
STANDBY
ENABLE3
ENABLE2
VTR POWER
RV102
FREQUENCY
TRIANGLE OSC
PWM COMP
SWITCHING DRIVE
Vcc 1
VOLTAGE ERROR AMP
RV101
5V
2.5V REF
U.V.L.O.
TIMER LATCH PROTECTION
L104
Q101,103
Vcc 2.3
CAPSTAN/DRUM PWM DRIVE
PWM SWITCHING
L110
L112
L111
L113
CN102
UNREG
SS 5V
EVF 5V
AU 5V
VI 5V
M UNREG
VTR POWER
CN101
CN103
CAM UNREG1
CAM UNREG2
SS-134 BOARD
(See page 135, 154.)
CN003
SERVO
IC005
CAPSTAN MOTOR DRIVE
IC006
DRUM MOTOR DRIVE
IC004
DRUM/CAPSTAN FG/PG AMP
IC150
ATF SERVO
IC001
MECHANISM CONTROL
VA PB MODE
RP PB MODE
BATT SENS
SERVO
DIGITAL FILTER
IC101~103
CHARACTOR GENERATOR
IC007
CHIP SELECT
IC008
NON-VOLATILE MEMORY
VIDEO(2)
HR-10 BOARD
REC/PB AMP
FLYING ERASE
Q272,273
REC 5V
OTL (REC Y RF)
Q240
Q229,231
RP 5V
PB RF AMP MIDDLE TUNING AMP
Q230,232
VA PB 5V
CH1' HEAD AMP
IC202
SP/LP,CLOG DETECT
IC204
E/L DISCRIMINATOR
SYSTEM CONTROL
D001
Q010
SYSTEM RESET (CN005 ㉖)
PS101
Q004,005
5V REG
SS 5V
VCC
VOLTAGE ERROR AMP
CAP PWM LPF
IC003
LM 5V
CN007
CAPSTAN MOTOR
CFG
CFG VCC
LOADING MOTOR
LM 5V
W001
CN005
UNREG
SS 5V
EVF 5V
AU 5V
VI 5V
W901
5V
CN901
CN902
S REEL FG SENSOR
TAPE END SENSOR
(See page 153.)
FP-89 BOARD
TAPE TOP SENSOR
TAPE LED
T REEL FG SENSOR
FP-90 BOARD
(See page 153.)
(See page 153.)
CC-60 BOARD
EVF 5V
CN004
W006
VI 5V
AU 5V
EVER DC
CAM UNREG2
CN654
CD-53 BOARD
(See page 123.)
IC101
CCD IMAGER
DT-77 BOARD
SIGNAL SEPARATOR
TIMING GENERATOR
IC121
SYNC GENERATOR
L182
L183
L184
CN101
15V
-9V
4.9V
CAMERA DC-DC CONVERTER
CAM UNREG 1
CAM DD ON
CAM UNREG
CAM 4.9V
VC-86 BOARD
(See page 120.)
MX-10 BOARD
MATRIX
IC401
ENCODER
IC509,510
WHITE BALANCE &AE DETECT
IC301,504
EVR
Q 652,653 654,656
CURRENT LIMITER
IC651 655,656
IRIS DRIVE HALL AMP
IC653
ZOOM MOTOR DRIVE
IC501
CAMERA CONTROL
CN653
AF UNREG
AUTO FOCUS
AF BOARD
SS 4.9V
CAM DD ON
CN305
CN304


BOARD
5, 154.)
UNREG
SS 5V
EVF 5V
AU 5V
VI 5V
CN005
IC005
CAPSTAN MOTOR DRIVE
IC006
DRUM MOTOR DRIVE
IC004
DRUM/ CAPSTAN FG/PG AMP
IC150
ATF SERVO
IC001
MECHANISM CONTROL
VA PB MODE 14
RP PB MODE 77
48 BATT SENS
SERVO
DIGITAL FILTER
IC101~103
CHARACTOR GENERATOR
VIDEO(2)
IC007
CHIP SELECT
IC008
NON-VOLATILE MEMORY
HR-10 BOARD
REC/PB AMP
FLYING ERASE
Q272,273
REC 5V
OTL (REC Y RF)
Q240
Q229,231
RP 5V
PB RF AMP MIDDLE TUNING AMP
Q230,232
VA PB 5V
CH1' HEAD AMP
IC202
SP/LP,CLOG DETECT
IC204
E/L DISCRIMINATOR
D001
Q010
SYSTEM RESET (CN005 26)
Q004,005
5V REG
SS 5V
VCC
VOLTAGE ERROR AMP
CAP PWM LPF
IC003
LM 5V
CN007
W901
5V
S REEL FG SENSOR
TAPE END SENSOR
(See page 153.)
CN901
FP-89 BOARD
TAPE TOP SENSOR
TAPE LED
T REEL FG SENSOR
CN902
(See page 153.)
CC-60 BOARD
FP-90 BOARD
(See page 153.)
CAM UNREG2
CN654
Q 652,653 654,656
CURRENT LIMITER
CN653
AF UNREG
AUTO FOCUS
AF BOARD
IC509,510
WHITE BALANCE &AE DETECT
IC651 655,656
IRIS DRIVE HALL AMP
IC653
ZOOM MOTOR DRIVE
IC501
CAMERA CONTROL
IC301,504
EVR
SS 4.9V
CAM DD ON
CN305
EVF 5V
CN004
W006
VI 5V
AU 5V
EVER DC
FD-44 BOARD
(See page 163, 165.)
CN201
UNREG
IC205
EVER 5V REG
IC206
EVER 5V DETECT
Q204
Q203
Q205
SS 5V
EVER DC
SS 5V
VTR POWER
IC201
MODE CONTROL
38 BATT IN
54 VDD
57
68 RESET
43 LI PRE END
29 VTR POWER
30 CAMERA POWER
LINCS PWR ON 44
K OUT 1 35
K OUT 2 36
K IN 0 60
Q206,211
INITIAL RESET
Q207,208
LITHIUM BATTERY PRE END DETECT
Q201
SS 5V
CAMERA POWER
CN205
IC203
SIRCS CONTROL
S IN 13
VDD 10
IC202
LANC I/O
9 WAKE UP
8 EVER 5V
1 UNREG
LANC OUT 11
LANC DC 14
LI 3V
EVER 5V
UNREG
SS 5V
EVER DC
IC303,304
COMPARATOR, ENCODER
IC302
SRAM (TITLE MEMORY)
IC301
TITLE CONTROL
DIGITAL TITLER
CN202
CN204
(See page 162.)
FK-47 BOARD
S509
POWER
VIDEO
OFF
CAMERA
CN501
REMOTE CONTROL RECEIVER
J702
REMOTE
CN701
(See page 163.)
LI-33 BOARD
CN603
J603
LITHIUM BATTERY
SW-168 BOARD
(See page 173.)
EVF 5V
CN702
CN703
(See page 139, 149.)
VA-64 BOARD
W650
IC650,651, 657,658
VIDEO (Y/CHROMA PROCESS)
IC662
EXPANTION PORT
Q674
REG
PB 5V
IC652
CHROMA JOG PROCESS
CN551
EVER DC
ELECTRIC VIEW FINDER
VF-26 or 27 BOARD
(See page 185, 186.)
IC901
CRT DRIVE
AU-99 BOARD
(See page 173.)
IC401,403,404
AUDIO (AFM STEREO PROCESS)
IC402
EXPANTION PORT
W401
AU 5V
CN401
MIC 5V
MC-63 BOARD
(See page 172.)
J802
DC OUT
IC801
W801
MIC AMP
CN802
STEREO MIC UNIT

3-15. VIEWFINDER (A) BLOCK DIAGRAM

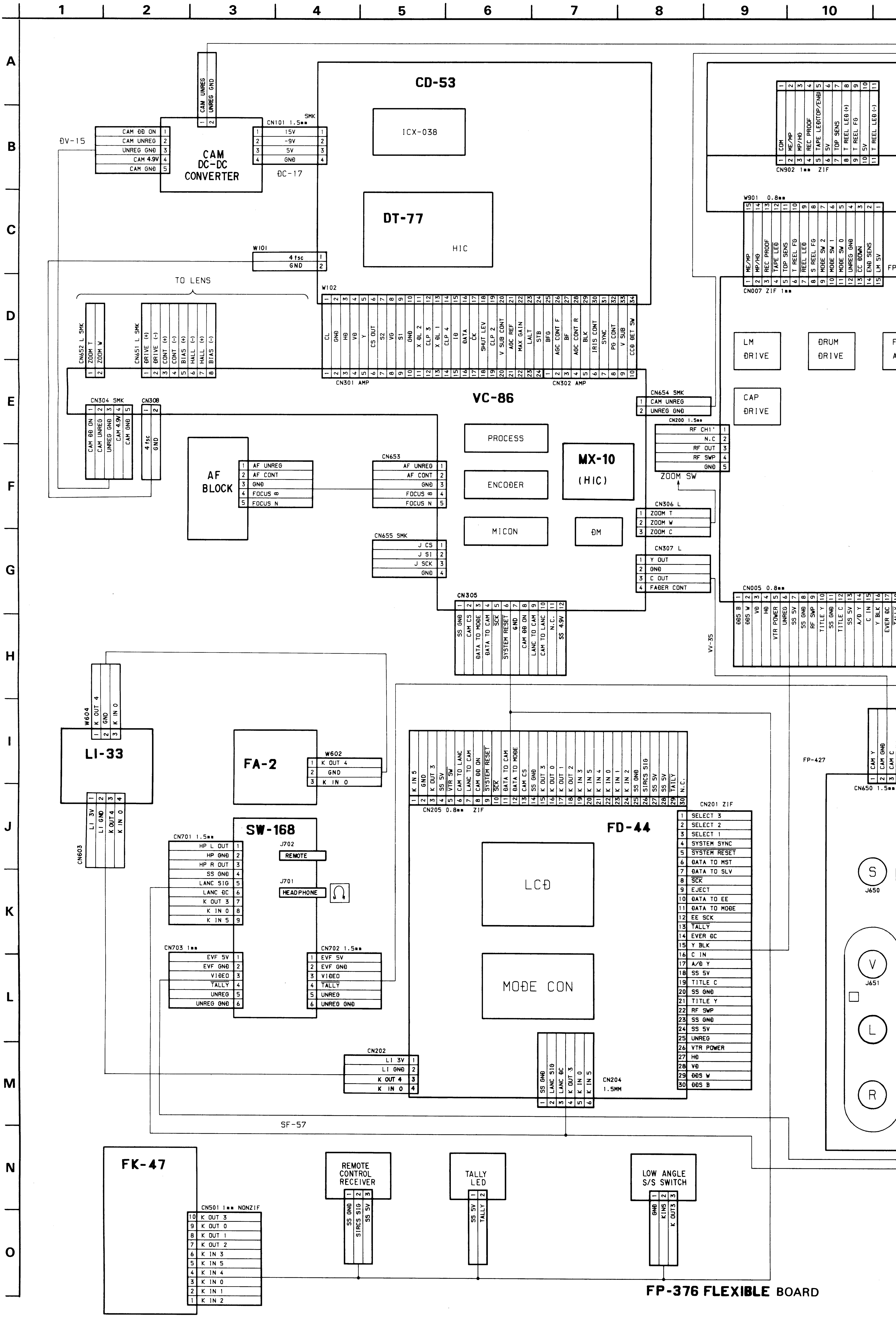

VF-27 BOARD
(See page 186.)
(See page 173.)
SW-168 BOARD
(1/3)
SYSTEM CONTROL (SS-134)
TALLY
DIGITAL TITLER (SS-134)
VIDEO
AFC
TALLY
EVF OUT
CN702
CN703
CN904
+4.9V
D955
TALLY
IC901
RV901
HFREQ
RV903
CONTRAST
Q903
VIDEO DRIVE
Q904
VIDEO OUT
Q905
H.OUT
C911
H SIZE
T901 FBT
+4.9
D903
DUMPER
RV904
BRIGHT
W901
G1
H
H
HV
G2
CRT
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
VCC
VCC
+4.9V
V FREQ
R912,913
C908
RV902
V SIZE
L903
(HLC)
CN903
DH1
DH2
L901 DY
H
V
CN902
DV1
DV2

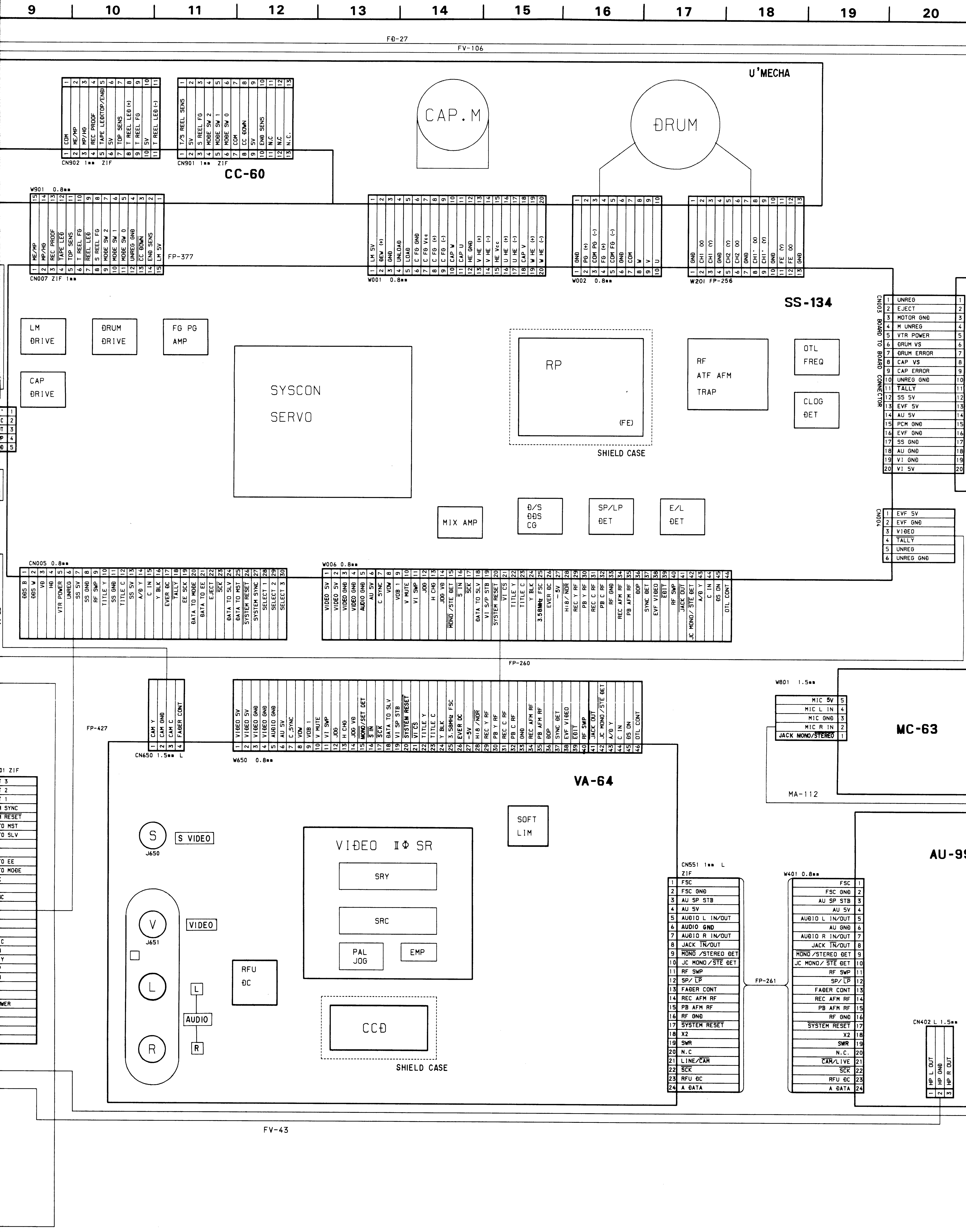
3-16. VIEWFINDER (B) BLOCK DIAGRAM


VF-26 BOARD
(See page 185.)
SW-168
BOARD (1/3)
(See page 173.)
SYSTEM CONTROL (SS-134)
TALLY
DIGITAL TITLER (SS-134)
VIDEO
AFC
TALLY
EVF OUT
CN702
CN703
CN904
+4.9V
D955
TALLY
IC901
CP 901
AFC
CP901
CONTRAST
Q904
VIDEO OUT
Q903
H.OUT
C905
H SIZE
T901 FBT
+5V
D903
DUMPER
RV901
FOCUS
CP901
BRIGHT
W901
G1
H1
H2
HV
G3
G2
CRT
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
Vcc
Vcc
+4.9V
V FREQ
R925,926
C919
CP901
V SIZE
L903
(HLC)
CN901
DH1
DH2
CN902
DV1
DV2
L901 DY
H
V

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

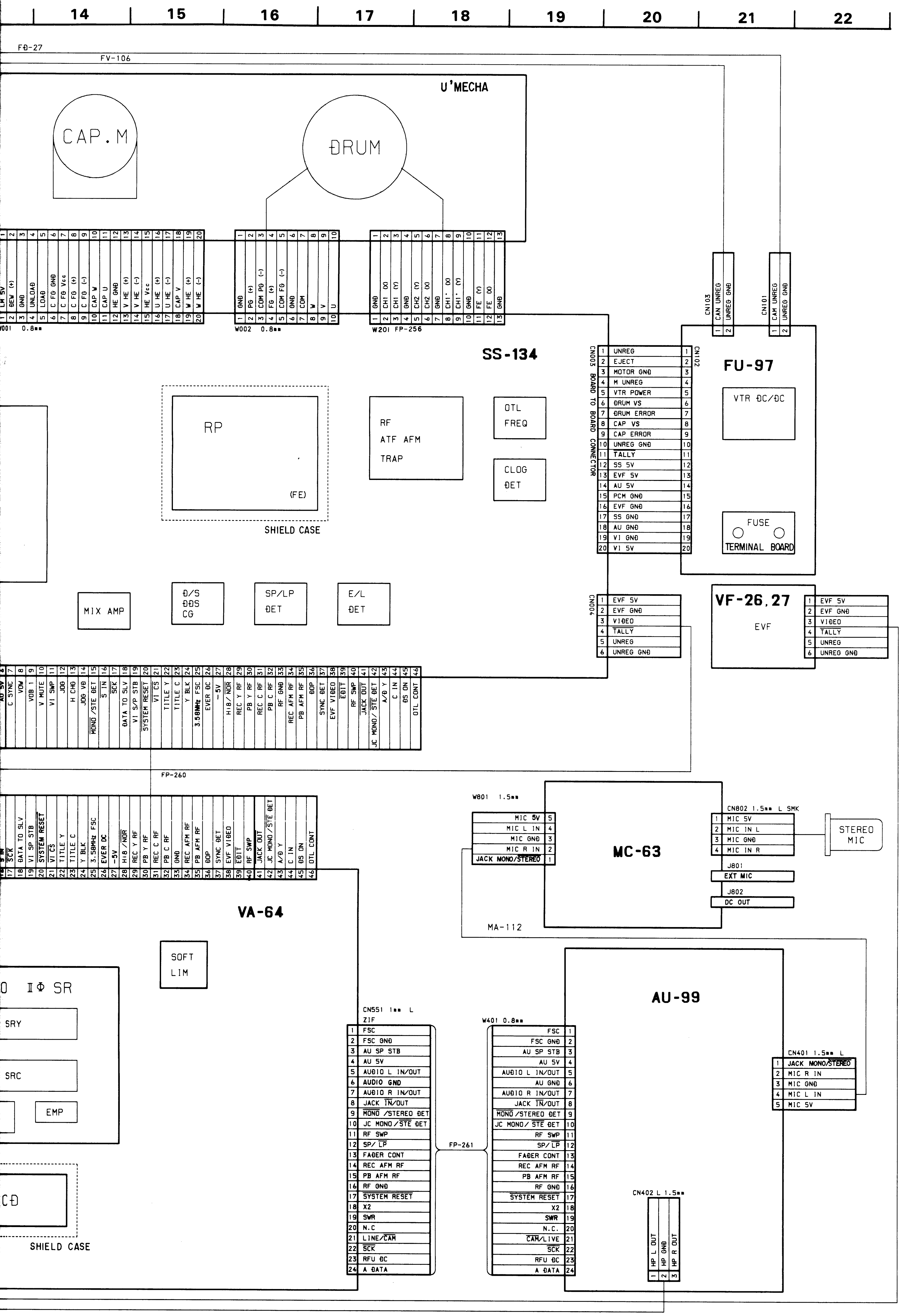
4-1. FRAME SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
CD-53
ICX-038
DT-77
HIC
CAM DC-DC CONVERTER
DV-15
DC-17
CN101 1.5mm
W101
W102
TO LENS
CN652 L SMK
CN651 L SMK
CN301 AMP
CN302 AMP
VC-86
CN304 SMK
CN308
AF BLOCK
CN653
PROCESS
ENCODER
MICON
MX-10 (HIC)
DM
CN654 SMK
CN200 1.5mm
ZOOM SW
CN306 L
CN307 L
CN655 SMK
CN305
CN902 1mm ZIF
W901 0.8mm
CN007 ZIF 1mm
LM DRIVE
DRUM DRIVE
CAP DRIVE
CN005 0.8mm
VV-35
LI-33
W604
CN603
FA-2
W602
SW-168
J702 REMOTE
J701 HEADPHONE
CN701 1.5mm
CN703 1mm
CN702 1.5mm
FD-44
CN205 0.8mm ZIF
CN201 ZIF
LCD
MODE CON
CN202
CN204 1.5MM
FP-427
CN650 1.5mm
J650
J651
SF-57
FK-47
CN501 1mm NONZIF
REMOTE CONTROL RECEIVER
TALLY LED
LOW ANGLE S/S SWITCH
FP-376 FLEXIBLE BOARD



9
10
11
12
13
14
15
16
17
18
19
20
FΘ-27
FV-106
U'MECHA
CAP.M
ÐRUM
CN902 1mm ZIF
1 COM
2 ME/MP
3 MP/MΘ
4 REC PROOF
5 TAPE LEÐ(TOP/END)
6 5V
7 TOP SENS
8 T REEL LEÐ (+)
9 T REEL FG
10 5V
11 T REEL LEÐ (-)
CN901 1mm ZIF
1 T/S REEL SENS
2 5V
3 S REEL FG
4 MOÐE SW 2
5 MOÐE SW 1
6 MOÐE SW 0
7 COM
8 CC ÐOWN
9 5V
10 END SENS
11 N.C
12 N.C
13 N.C.
CC-60
W901 0.8mm
FP-377
CN007 ZIF 1mm
1 ME/MP
2 MP/MΘ
3 REC PROOF
4 TAPE LEÐ
5 TOP SENS
6 T REEL FG
7 REEL LEÐ
8 S REEL FG
9 MOÐE SW 2
10 MOÐE SW 1
11 MOÐE SW 0
12 UNREG GNÐ
13 CC ÐOWN
14 END SENS
15 LM 5V
W001 0.8mm
1 LM 5V
2 ÐEW (+)
3 GNÐ
4 UNLOAÐ
5 LOAÐ
6 C FG GNÐ
7 C FG Vcc
8 C FG (+)
9 C FG (-)
10 CAP W
11 CAP U
12 HE GNÐ
13 V HE (+)
14 V HE (-)
15 HE Vcc
16 U HE (+)
17 U HE (-)
18 CAP V
19 W HE (+)
20 W HE (-)
W002 0.8mm
1 GNÐ
2 PG (+)
3 COM PG (-)
4 FG (+)
5 COM FG (-)
6 GNÐ
7 COM
8 W
9 V
10 U
W201 FP-256
1 GNÐ
2 CH1 (X)
3 CH1 (Y)
4 GNÐ
5 CH2 (Y)
6 CH2 (X)
7 GNÐ
8 CH1' (X)
9 CH1' (Y)
10 GNÐ
11 FE (Y)
12 FE (X)
13 GNÐ
SS-134
LM ÐRIVE
ÐRUM ÐRIVE
FG PG AMP
CAP ÐRIVE
SYSCON SERVO
RP
(FE)
SHIELD CASE
RF ATF AFM TRAP
OTL FREQ
CLOG ÐET
MIX AMP
Ð/S ÐÐS CG
SP/LP ÐET
E/L ÐET
CN003 BOARD TO BOARD CONNECTOR
1 UNREG
2 EJECT
3 MOTOR GNÐ
4 M UNREG
5 VTR POWER
6 ÐRUM VS
7 ÐRUM ERROR
8 CAP VS
9 CAP ERROR
10 UNREG GNÐ
11 TALLY
12 SS 5V
13 EVF 5V
14 AU 5V
15 PCM GNÐ
16 EVF GNÐ
17 SS GNÐ
18 AU GNÐ
19 VI GNÐ
20 VI 5V
CN004
1 EVF 5V
2 EVF GNÐ
3 VIÐEO
4 TALLY
5 UNREG
6 UNREG GNÐ
CN005 0.8mm
1 ÐÐS B
2 ÐÐS W
3 VÐ
4 HÐ
5 VTR POWER
6 UNREG
7 SS 5V
8 SS GNÐ
9 RF SWP
10 TITLE Y
11 SS GNÐ
12 TITLE C
13 SS 5V
14 A/D Y
15 C IN
16 Y BLK
17 EVER ÐC
18 TALLY
19 EE SCK
20 ÐATA TO MOÐE
21 ÐATA TO EE
22 EJECT
23 SCK
24 ÐATA TO SLV
25 ÐATA TO MST
26 SYSTEM SYNC
27 SELECT 1
28 SELECT 2
29 SELECT 3
W006 0.8mm
1 VIÐEO 5V
2 VIÐEO 5V
3 VIÐEO GNÐ
4 VIÐEO GNÐ
5 AUÐIO GNÐ
6 AU 5V
7 C SYNC
8 VÐW
9 VÐB 1
10 V MUTE
11 VI SWP
12 JOG
13 H CHG
14 JOG VÐ
15 MONO/STE ÐET
16 S IN
17 SCK
18 ÐATA TO SLV
19 VI S/P STB
20 SYSTEM RESET
21 VI CS
22 TITLE Y
23 TITLE C
24 Y BLK
25 3.58MHz FSC
26 EVER ÐC
27 -5V
28 HI8 / NOR
29 REC Y RF
30 PB Y RF
31 REC C RF
32 PB C RF
33 RF GNÐ
34 REC AFM RF
35 PB AFM RF
36 ÐOP
37 SYNC ÐET
38 EVF VIÐEO
39 EÐIT
40 RF SWP
41 JACK OUT
42 JC MONO/STE ÐET
43 A/Ð Y
44 C IN
45 ÐS ON
46 OTL CONT
FP-260
CN650 1.5mm L
1 CAM Y
2 CAM GNÐ
3 CAM C
4 FAÐER CONT
FP-427
W650 0.8mm
1 VIÐEO 5V
2 VIÐEO 5V
3 VIÐEO GNÐ
4 VIÐEO GNÐ
5 AUÐIO GNÐ
6 AU 5V
7 C.SYNC
8 VÐW
9 VÐB 1
10 V MUTE
11 VI SWP
12 JOG
13 H CHG
14 JOG VÐ
15 MONO/SET ÐET
16 S IN
17 SCK
18 ÐATA TO SLV
19 VI SP STB
20 SYSTEM RESET
21 VI CS
22 TITLE Y
23 TITLE C
24 Y BLK
25 3.58MHz FSC
26 EVER ÐC
27 -5V
28 HI8 / NOR
29 REC Y RF
30 PB Y RF
31 REC C RF
32 PB C RF
33 GNÐ
34 REC AFM RF
35 PB AFM RF
36 ÐOP
37 SYNC ÐET
38 EVF VIÐEO
39 EÐIT
40 RF SWP
41 JACK OUT
42 JC MONO/STE ÐET
43 A/Ð Y
44 C IN
45 ÐS ON
46 OTL CONT
VA-64
W801 1.5mm
5 MIC 5V
4 MIC L IN
3 MIC GNÐ
2 MIC R IN
1 JACK MONO/STEREO
MC-63
MA-112
AU-9
S
J650
S VIÐEO
V
J651
VIÐEO
L
R
L
AUÐIO
R
SOFT LIM
VIÐEO IΦ SR
SRY
SRC
PAL JOG
EMP
RFU ÐC
CCÐ
SHIELD CASE
CN551 1mm L ZIF
1 FSC
2 FSC GNÐ
3 AU SP STB
4 AU 5V
5 AUÐIO L IN/OUT
6 AUÐIO GNÐ
7 AUÐIO R IN/OUT
8 JACK IN/OUT
9 MONO /STEREO ÐET
10 JC MONO/STE ÐET
11 RF SWP
12 SP/LP
13 FAÐER CONT
14 REC AFM RF
15 PB AFM RF
16 RF GNÐ
17 SYSTEM RESET
18 X2
19 SWR
20 N.C
21 LINE/CAM
22 SCK
23 RFU ÐC
24 A ÐATA
FP-261
W401 0.8mm
FSC 1
FSC GNÐ 2
AU SP STB 3
AU 5V 4
AUÐIO L IN/OUT 5
AU GNÐ 6
AUÐIO R IN/OUT 7
JACK IN/OUT 8
MONO/STEREO ÐET 9
JC MONO/ STE ÐET 10
RF SWP 11
SP/LP 12
FAÐER CONT 13
REC AFM RF 14
PB AFM RF 15
RF GNÐ 16
SYSTEM RESET 17
X2 18
SWR 19
N.C. 20
CAM/LIVE 21
SCK 22
RFU ÐC 23
A ÐATA 24
CN402 L 1.5mm
1 HP L OUT
2 HP GNÐ
3 HP R OUT
FV-43
01 ZIF

LEXIBLE BOARD


14
15
16
17
18
19
20
21
22
FD-27
FV-106
U'MECHA
CAP.M
DRUM
W001 0.8mm
W002 0.8mm
W201 FP-256
SS-134
RP
(FE)
SHIELD CASE
RF
ATF AFM
TRAP
OTL
FREQ
CLOG
DET
CN005 BOARD TO BOARD CONNECTOR
CN102
CN103
CN101
FU-97
VTR DC/DC
FUSE
TERMINAL BOARD
MIX AMP
D/S
DDS
CG
SP/LP
DET
E/L
DET
CN004
VF-26,27
EVF
FP-260
W801 1.5mm
CN802 1.5mm L SMK
MC-63
STEREO
MIC
J801
EXT MIC
J802
DC OUT
MA-112
VA-64
SOFT
LIM
II Φ SR
SRY
SRC
EMP
CD
SHIELD CASE
AU-99
CN551 1mm L
ZIF
W401 0.8mm
FP-261
CN401 1.5mm L
CN402 L 1.5mm
HP L OUT
HP GND
HP R OUT

4-2. PRINTED WIRING BOARDS

THIS NOTE IS COMMON FO
AND SCHEMATIC DIAGRAMS
(In addition to this, the neces

- **For printed wiring boards.**
- ● : Through hole.
- ▨ : Pattern from the side which e
- ■ : Pattern of the rear side. *

- **For schematic diagram.**
- Caution when replacing chip parts.
  New parts must be attached after re
  Be careful not to heat the minus
  because it is damaged by the heat.
- All resistors are in ohms, 1/10W o
  kΩ: 1000Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless other
  50V or less are not indicated excep
  tantalums.
- All variable and adjustable resisto
  unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- ☐ : panel designation.
- △ : internal component.
- ☐ : adjustment for repair. *
- ━ : B + Line *
- Circled numbers refer to waveforms
- ⇨ : IN/OUT direction of B (+, –

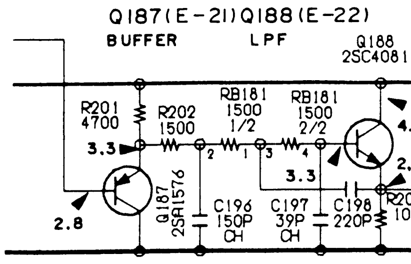
Note: The components identified b
line with mark ⚠ are critical
Replace only with part numbe

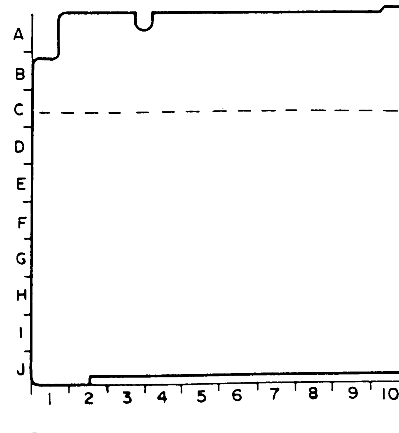
When indicating parts by reference number, please include the board name.

* Indicated by the color red.

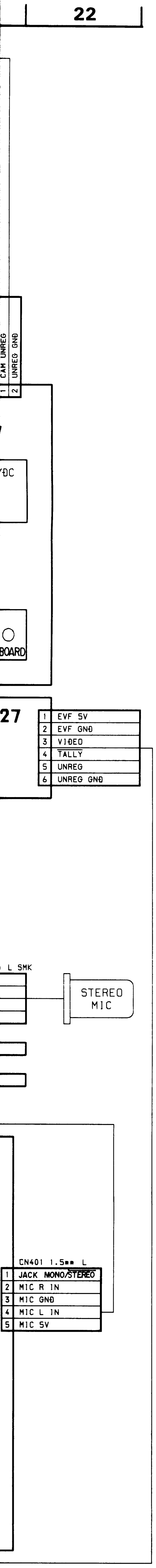
[SEMICONDUCTOR LOCATION]

In this service manual, the mounted lo
ductors (IC, transistor, diodes) are ind
This enables to find the location on
servicing.


Q187(E-21)Q188(E-22)
BUFFER
LPF
Q188
2SC4081
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P


(COMPONENT SIDE)
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
9
10

[Semiconductor for Correction List Displa
Part code and part name of the semicond
board is described in the space of each p
ordering parts.


22
1 CAM UNREG
2 UNREG GND
DC
BOARD
27
1 EVF 5V
2 EVF GND
3 VIDEO
4 TALLY
5 UNREG
6 UNREG GND
L SMK
STEREO MIC
CN401 1.5mm L
1 JACK MONO/STEREO
2 MIC R IN
3 MIC GND
4 MIC L IN
5 MIC 5V

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- ● : Through hole.
- ▒ : Pattern from the side which enables seeing.
- ▓ : Pattern of the rear side.*

- **For schematic diagram.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W or 1/16W unless otherwise noted.
  kΩ: 1000Ω, MΩ: 1000kΩ.

- All capacitors are in μF unless otherwise noted. pF : μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ☐ : panel designation.
- △ : internal component.
- ☐ : adjustment for repair.*
- ━ : B + Line*
- Circled numbers refer to waveforms.*
- ➾ : IN/OUT direction of B (+, –) line.*

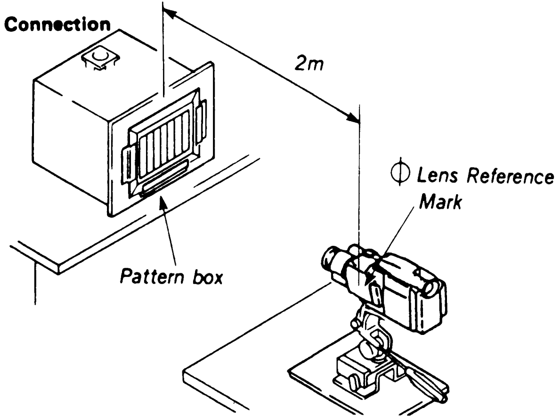
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

* Indicated by the color red.

- **For voltage and waveforms. (CAM REC mode)**
- Voltage and waveform measuring conditions:*
  (1) Sample object: Pattern box color bars.*
  (2) Voltage values: Relative to ground, measured with a DC digital multimeter (impedance 10M-ohm or more).*

1. Connection


2m
Lens Reference Mark
Pattern box

2. Adjust the zooming of camera and the tripod so that the output waveform of Fig. a and the picture of Fig. b can be obtain.

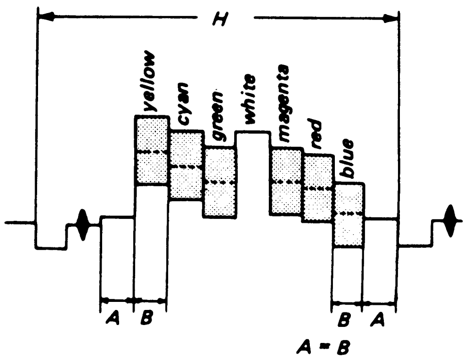

H
yellow
cyan
green
white
magenta
red
blue
A
B
B
A
A = B

Fig. a Video output waveform.

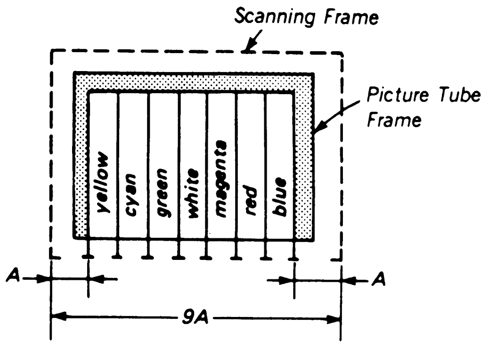

Scanning Frame
Picture Tube Frame
yellow
cyan
green
white
magenta
red
blue
A
A
9A

Fig. b Picture of TV monitor screen

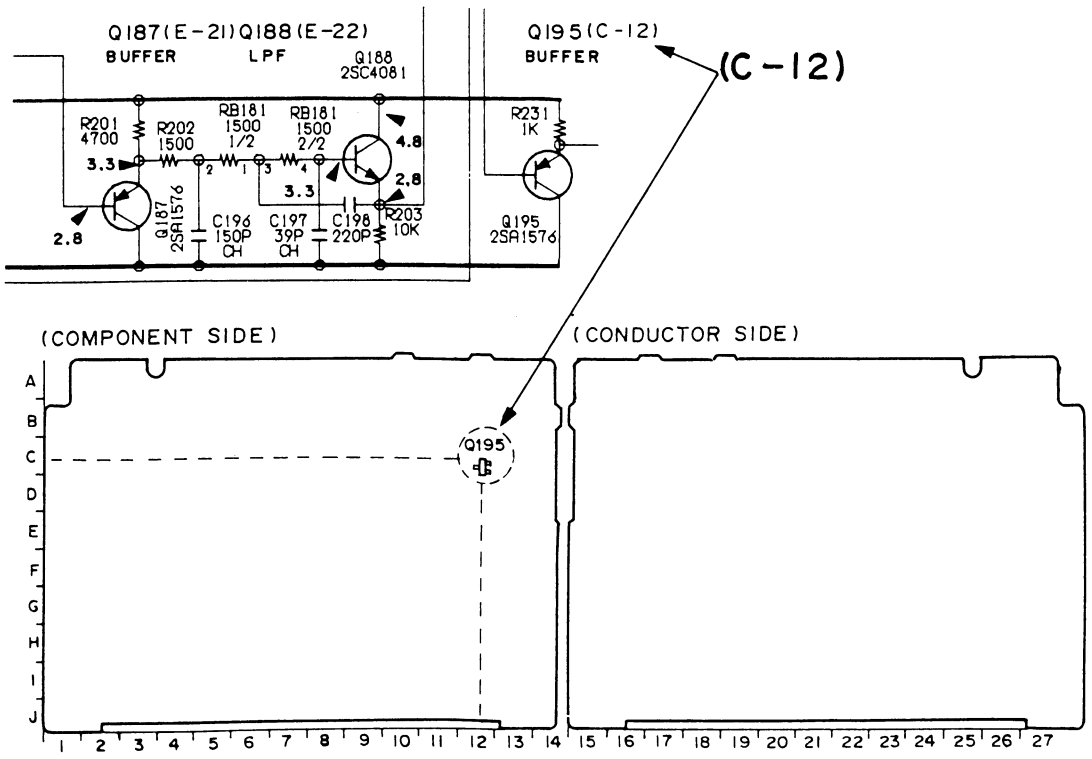
- **For voltage and waveforms. (REC/PB mode)**
- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

Precautions for replacement of CCD imager block.

- With a pair of IC101 (CCD imager) on the CD-53 complete board and IC001 (corrector ROM) on the DT-77 complete board, it is used a repair part of the CCD imager block.
  Since corrector ROM IC is manufactured to match the CCD imager, replacement of a single unit of the CCD imager corrector ROM cannot be allowed.
- When both a CCD imager and the corrector ROM, replace both the CCD imager and the corrector ROM, when a corrector ROM is not mounted on the service set, install a corrector ROM which is supplied anew.
- IC101 (CCD imager) is not mounted on the CD-53 complete board to be supplied as a repair part, and IC001 (corrector ROM) is not mounted on the DT-77 complete board to be supplied as a repair part. When the respective boards are replaced, remove the respective ICs from the old boards and install them to the new once respectively.
- After the CCD imager block has been replaced, perform the entire adjustments of the camera section.
- CCD imager is structurally in case of being broken down by static electricity.
  For this reason, take care to handle it as well as MOS IC. Moreover, care should be taken for dust not to be stuck on the light reseiving section and for strong light not to get into there.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated as shown below. This enables to find the location on the board easily when servicing.


Q187(E-21)Q188(E-22)
BUFFER
LPF
Q188 2SC4081
Q195(C-12)
BUFFER
(C-12)
R201 4700
R202 1500
RB181 1500 1/2
RB181 1500 2/2
R231 1K
3.3
4.8
3.3
2.8
2.8
Q187 2SA1576
C196 150P CH
C197 39P CH
C198 220P
R203 10K
Q195 2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27

[Semiconductor for Correction List Display]
Part code and part name of the semiconductor for correction of the print board is described in the space of each print figure. Use this list when ordering parts.

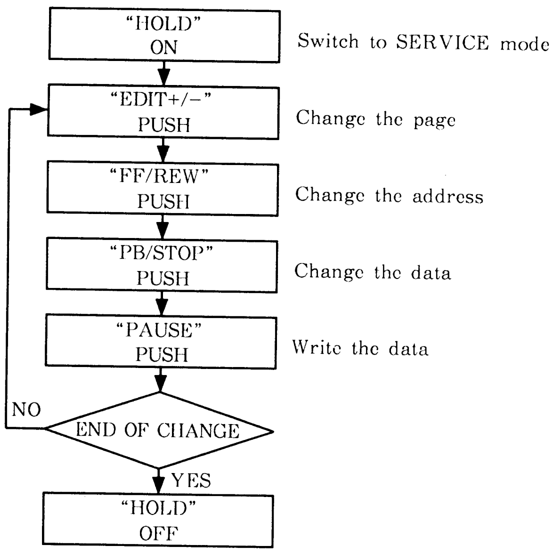
[To set the AEP, UK model to REC mode]

1. Enter SERVICE mode with the adjustment remote control.
2. Set the data at address: 00 on page: 1 to 01 ∗ 1.
3. Set the data at address: 02 on page: D to 03 ∗1.
4. Turn the power of the set off.
5. Turn the power of the set on.
6. Make shorting once for S508 land (REC switch) of FK-47 board.

After voltage measurement and adjustment, restore as follows:

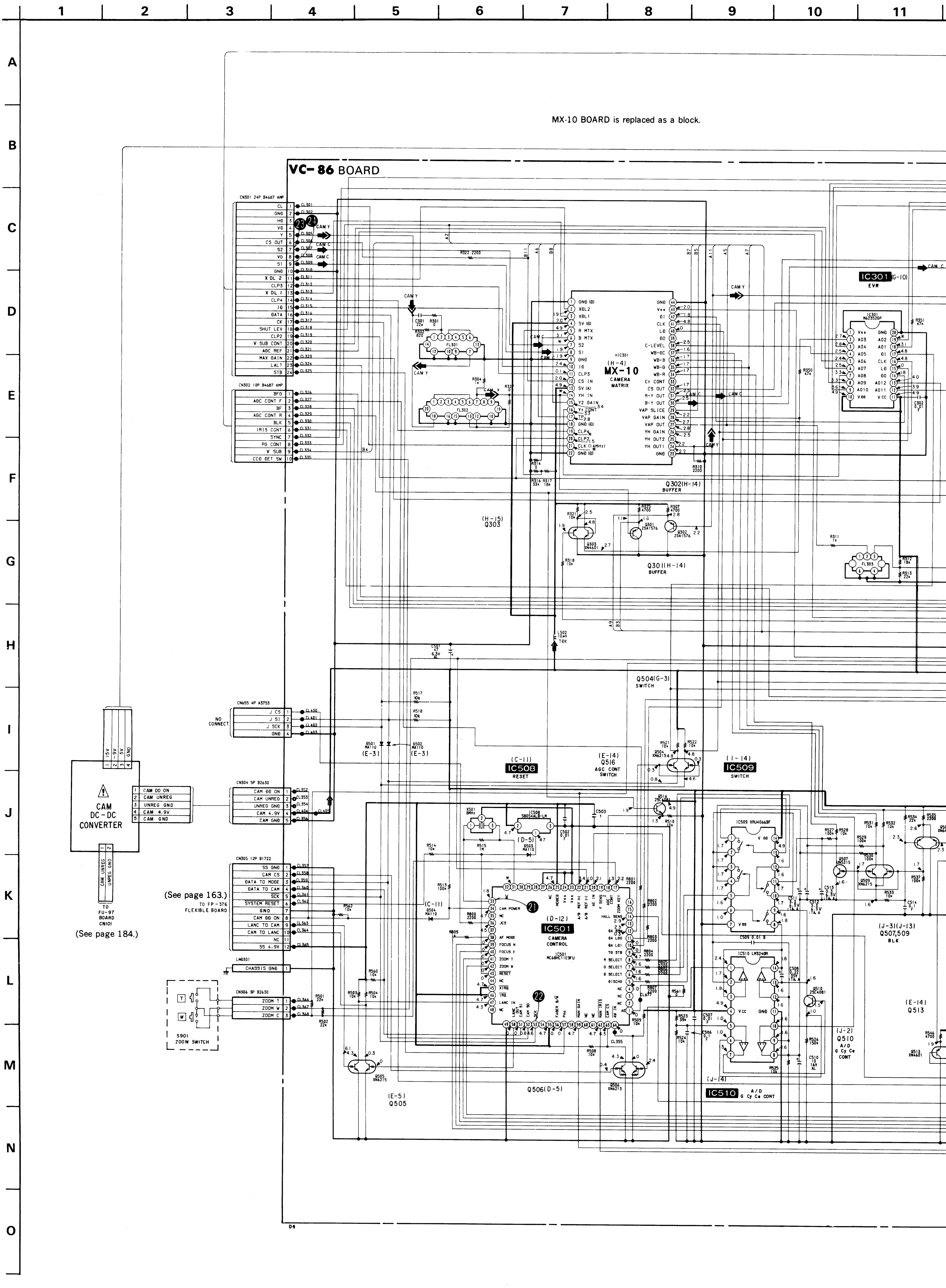
1. Set the data at address: 00 on page: 1 to 01 ∗1.
2. Set the data at address: 02 on page: D to 02 ∗1.
3. Turn the power of the set off.

∗1 [To change the data]

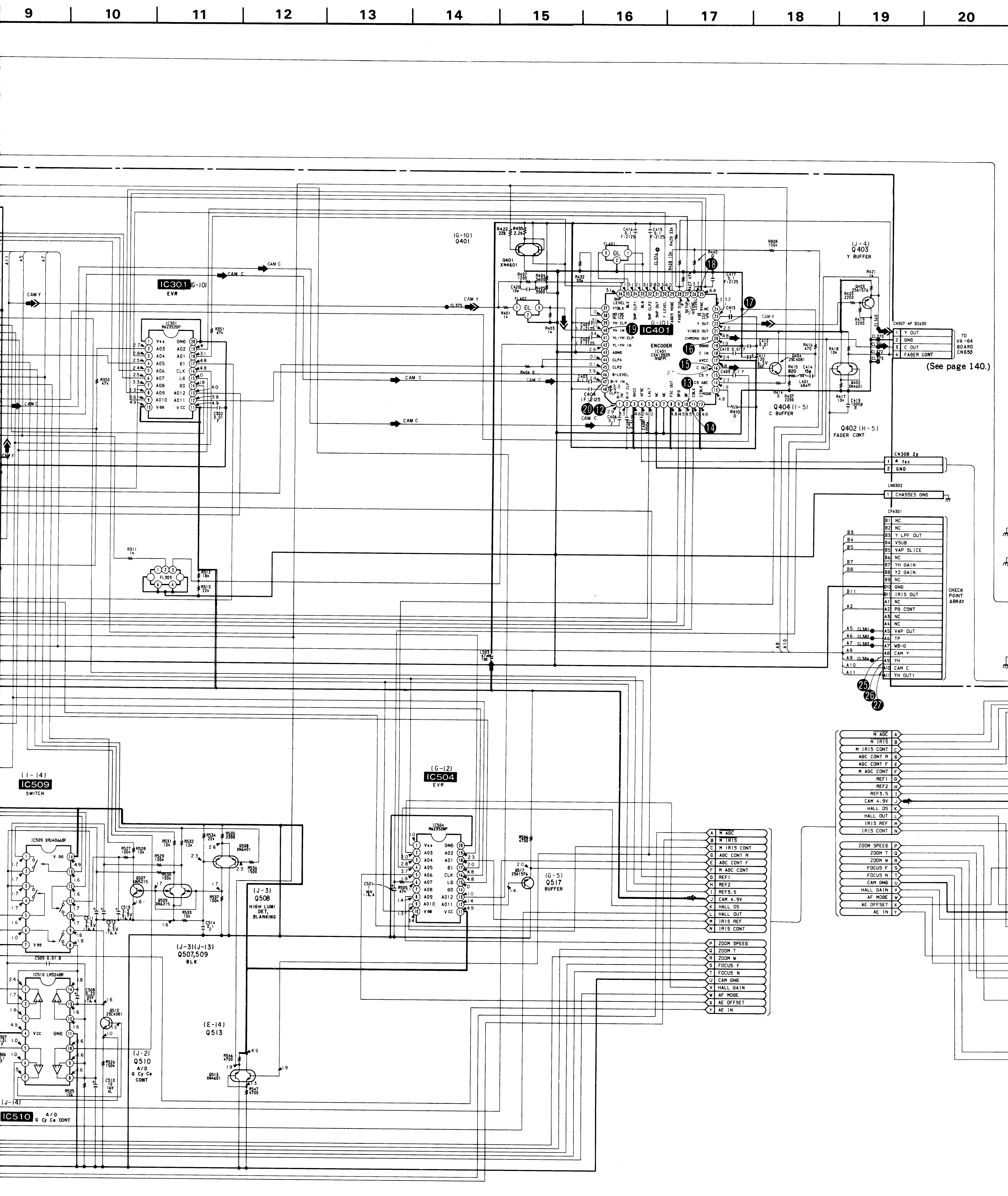

"HOLD" ON
Switch to SERVICE mode
"EDIT+/–" PUSH
Change the page
"FF/REW" PUSH
Change the address
"PB/STOP" PUSH
Change the data
"PAUSE" PUSH
Write the data
END OF CHANGE
NO
YES
"HOLD" OFF

VC-86 (CAMERA PROCESS, ZOOM/FOCUS), CD-53 (CCD IMAGER) SCHEMATIC DIAGRAM

—Ref. No. VC-86, CD-53 BOARDS : 1000 series—

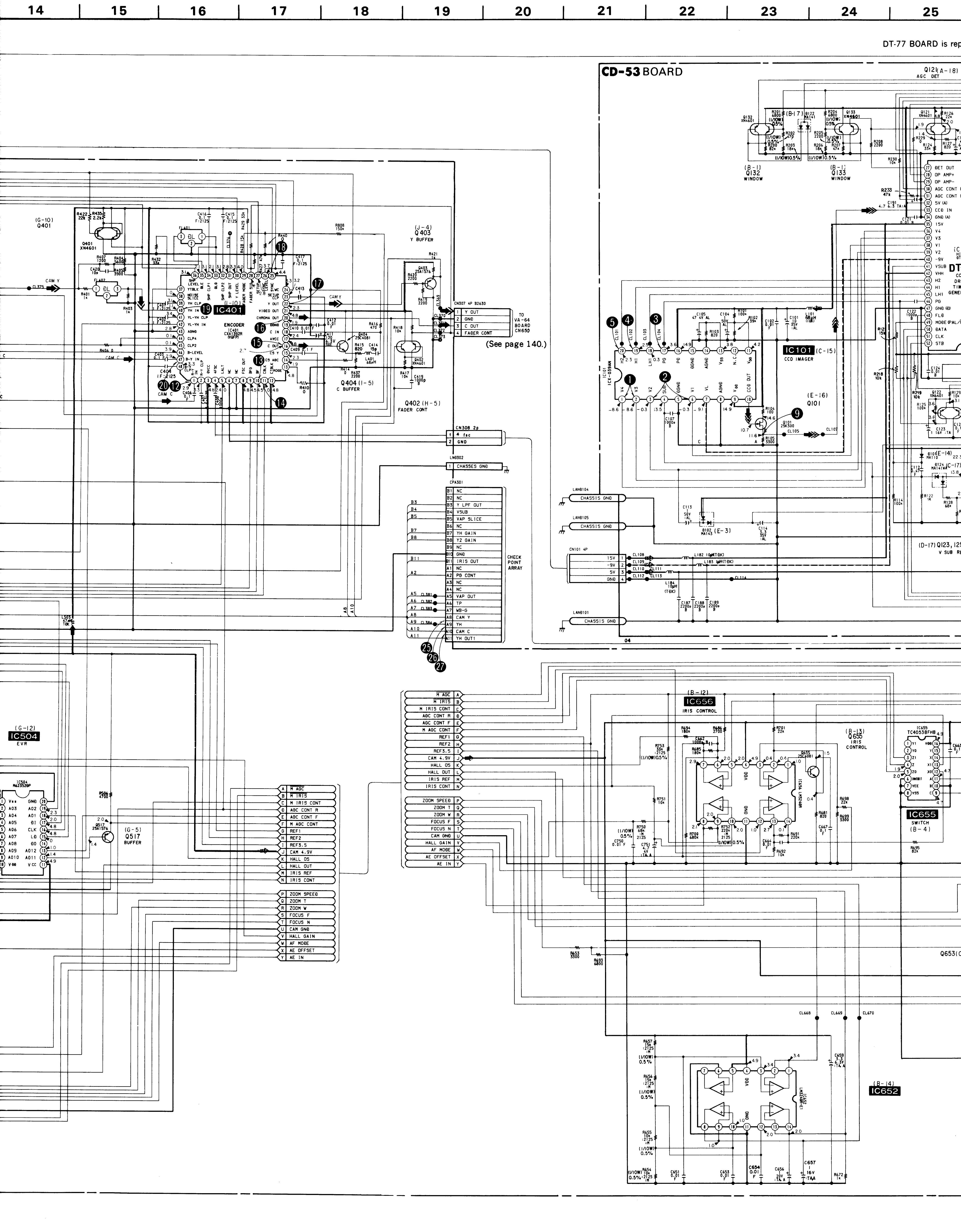


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
MX-10 BOARD is replaced as a block.
VC-86 BOARD
CN301 24P B4687 AMP
CL
GND
HD
Y
CS OUT
S2
VG
S1
GND
X DL 2
CLP3
X DL 1
CLP4
ID
DATA
CK
SHUT LEV
CLP2
V SUB CONT
AGC REF
MAX GAIN
LALT
STB
CN302 10P B4687 AMP
BFG
AGC CONT F
BF
AGC CONT R
BLK
IRIS CONT
SYNC
PG CONT
V SUB
CCD DET SW
CAM Y
CAM C
FL301
FL302
HIC301
(H-4)
MX-10
CAMERA MATRIX
Q302(H-14) BUFFER
Q301(H-14) BUFFER
(H-15) Q303
IC301 (G-10)
EVR
FL303
CN655 4P A3753
J CS
J SI
J SCK
GND
NO CONNECT
D501 MA110 (E-3)
D502 MA110 (E-3)
(C-11) IC508 RESET
(E-14) Q516 AGC CONT SWITCH
Q504(G-3) SWITCH
(I-14) IC509 SWITCH
CAM DC-DC CONVERTER
15V
-9V
5V
GND
CAM DD ON
CAM UNREG
UNREG GND
CAM 4.9V
CAM GND
CN304 5P B2630
CN305 12P B1722
SS GND
CAM CS
DATA TO MODE
DATA TO CAM
SCK
SYSTEM RESET
GND
CAM DD ON
LANC TO CAM
CAM TO LANC
NC
SS 4.9V
(See page 163.)
TO FP-376 FLEXIBLE BOARD
CAM UNREG
UNREG GND
TO FU-97 BOARD CN101
(See page 184.)
LM0301
CHASSIS GND
CN306 3P B2630
ZOOM T
ZOOM W
ZOOM C
S901 ZOOM SWITCH
(D-12)
IC501
CAMERA CONTROL
IC501 MC68HC11E9FU
X501 8MHz
IC508 S8054ALB-LM
IC509 XRU4066BF
IC510 LM3240R
(E-5) Q505
Q506(D-5)
(J-4) IC510 A/D G Cy Ce CONT
(J-3)(J-13) Q507,509 BLK
(J-2) Q510 A/D G Cy Ce CONT
(E-14) Q513
CAM C
04



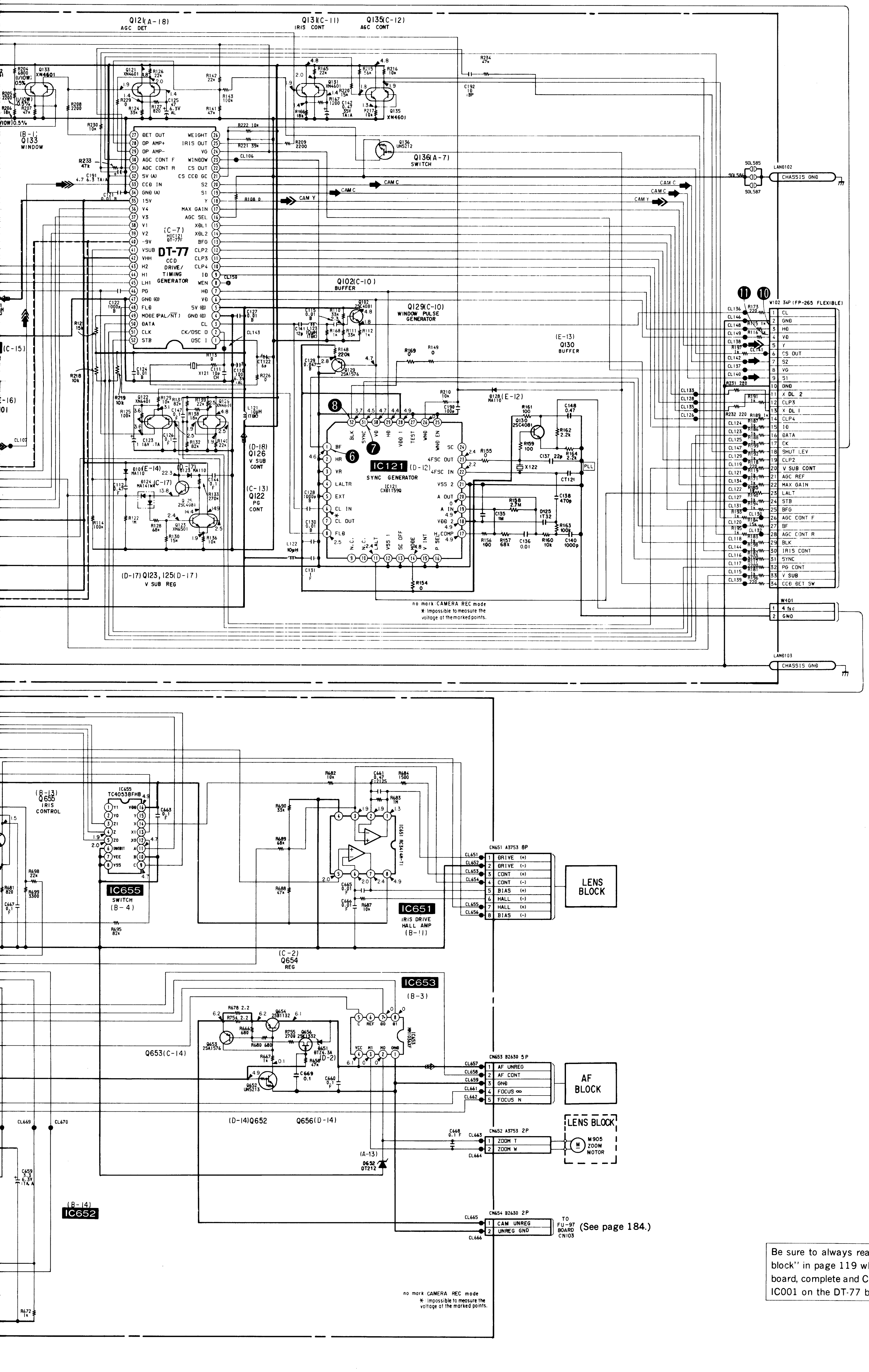
9
10
11
12
13
14
15
16
17
18
19
20
IC301 (G-10)
EVR
IC301 M62352GP
CAM C
CAM Y
(G-10)
Q401
Q401 XN4601
FL401
FL402
(I-10)
IC401
ENCODER
IC401 CXA1392R
SHP LEVEL
YTBLK
NOISE SLICE
YH CLP
YH IN
YL-YH CLP
YL-YH IN
AGND
CLP4
CLP2
B-LEVEL
B-Y IN
Y OUT
VIDEO OUT
CHROMA OUT
DGND
C IN
AVCC
C OUT
CS ADC
CS Y
MODE
(J-4)
Q403
Y BUFFER
Q403 2SA1576
Q404 2SC4081
Q404 (I-5)
C BUFFER
Q402 XN4601
Q402 (H-5)
FADER CONT
CN307 4P B2630
1 Y OUT
2 GND
3 C OUT
4 FADER CONT
TO VA-64 BOARD CN650
(See page 140.)
CN308 2p
1 4 fsc
2 GND
LN0302
1 CHASSES GND
CPA501
B1 NC
B2 NC
B3 Y LPF OUT
B4 VSUB
B5 VAP SLICE
B6 NC
B7 YH GAIN
B8 Y2 GAIN
B9 NC
B10 GND
B11 IRIS OUT
A1 NC
A2 PG CONT
A3 NC
A4 NC
A5 VAP OUT
A6 TP
A7 WB-G
A8 CAM Y
A9 YH
A10 CAM C
A11 YH OUT1
CHECK POINT ARRAY
FL303
(I-14)
IC509
SWITCH
IC509 XRU4066BF
IC510 LM324OR
(J-14)
IC510 A/D G Cy Ce CONT
Q507 UN5215
Q509 XN6215
Q508 XN6401
(J-3)
Q508
HIGH LUMI DET, BLANKING
(J-3)(J-13)
Q507,509
BLK
(J-2)
Q510
A/D G Cy Ce CONT
Q510 2SC4081
(E-14)
Q513
Q513 XN4601
(G-12)
IC504
EVR
IC504 M62352GP
(G-5)
Q517
BUFFER
Q517 2SA1576
A M AGC
B M IRIS
C M IRIS CONT
D AGC CONT R
E AGC CONT F
F M AGC CONT
G REF1
H REF2
I REF3.5
J CAM 4.9V
K HALL OS
L HALL OUT
M IRIS REF
N IRIS CONT
P ZOOM SPEED
Q ZOOM T
R ZOOM W
S FOCUS F
T FOCUS N
U CAM GND
V HALL GAIN
W AF MODE
X AE OFFSET
Y AE IN

DT-77 BOARD is rep



14
15
16
17
18
19
20
21
22
23
24
25
CD-53 BOARD
IC401
ENCODER
CXA1392R
(G-10) Q401
XN4601
(J-4) Q403
Y BUFFER
2SA1576
Q404 (I-5)
C BUFFER
2SC4081
Q402 (H-5)
FADER CONT
XN4601
CN307 4P B2630
Y OUT
GND
C OUT
FADER CONT
TO VA-64 BOARD CN650
(See page 140.)
CN308 2p
4 fsc
GND
LN0302
CHASSES GND
CPA301
CHECK POINT ARRAY
NC
Y LPF OUT
VSUB
VAP SLICE
YH GAIN
Y2 GAIN
GND
IRIS OUT
PG CONT
VAP OUT
TP
WB-G
CAM Y
YH
CAM C
YH OUT1
CAM Y
CAM C
IC101
CCD IMAGER
ICX-039AN
(E-16) Q101
2SK300
Q132 WINDOW
Q133 WINDOW
Q121 (A-18) AGC DET
CHASSIS GND
CN101 4P
15V
-9V
5V
GND
DET OUT
OP AMP+
OP AMP-
AGC CONT
5V (A)
CCD IN
GND (A)
15V
V4
V3
V1
V2
-9V
VSUB
VHH
H2
H1
LH1
PG
GND (D)
FLD
MODE (PAL/
DATA
CLK
STB
(D-17) Q123, 12
V SUB R
(G-12) IC504
EVR
M62352GP
(G-5) Q517
BUFFER
2SA1576
M AGC
M IRIS
M IRIS CONT
AGC CONT R
AGC CONT F
M AGC CONT
REF1
REF2
REF3.5
CAM 4.9V
HALL OS
HALL OUT
IRIS REF
IRIS CONT
ZOOM SPEED
ZOOM T
ZOOM W
FOCUS F
FOCUS N
CAM GND
HALL GAIN
AF MODE
AE OFFSET
AE IN
(B-12) IC656
IRIS CONTROL
(B-13) Q655
IRIS CONTROL
2SC4081
IC655
TC4053BFHB
IC655
SWITCH (B-4)
(B-14) IC652
Q653

DT-77 BOARD is replaced as a block.


Q121(A-18) AGC DET
Q131(C-11) IRIS CONT
Q135(C-12) AGC CONT
(B-1) Q133 WINDOW
Q136(A-7) SWITCH
(C-7) DT-77 CCD DRIVE/ TIMING GENERATOR
Q102(C-10) BUFFER
Q129(C-10) WINDOW PULSE GENERATOR
(E-13) Q130 BUFFER
IC121 (D-12) SYNC GENERATOR
(D-18) Q126 V SUB CONT
(C-13) Q122 PG CONT
(D-17) Q123, 125(D-17) V SUB REG
CAM C
CAM Y
CHASSIS GND
W102 34P (FP-265 FLEXIBLE)
1 CL
2 GND
3 HD
4 VD
5 Y
6 CS OUT
7 S2
8 VG
9 S1
10 GND
11 X DL 2
12 CLP3
13 X DL 1
14 CLP4
15 ID
16 DATA
17 CK
18 SHUT LEV
19 CLP2
20 V SUB CONT
21 AGC REF
22 MAX GAIN
23 LALT
24 STB
25 BFG
26 AGC CONT F
27 BF
28 AGC CONT R
29 BLK
30 IRIS CONT
31 SYNC
32 PG CONT
33 V SUB
34 CCD DET SW
W101
1 4 fsc
2 GND
no mark CAMERA REC mode
*: Impossible to measure the voltage at the marked points.
(B-13) Q655 IRIS CONTROL
IC655 SWITCH (B-4)
IC651 IRIS DRIVE HALL AMP (B-11)
(C-2) Q654 REG
CN651 A3753 8P
1 DRIVE (+)
2 DRIVE (-)
3 CONT (+)
4 CONT (-)
5 BIAS (+)
6 HALL (-)
7 HALL (+)
8 BIAS (-)
LENS BLOCK
IC653 (B-3)
Q653(C-14)
(D-14)Q652
Q656(D-14)
CN653 B2630 5P
1 AF UNREG
2 AF CONT
3 GND
4 FOCUS ∞
5 FOCUS N
AF BLOCK
CN652 A3753 2P
1 ZOOM T
2 ZOOM W
LENS BLOCK
M905 ZOOM MOTOR
(A-13) D652 DT212
(B-14) IC652
CN654 B2630 2P
1 CAM UNREG
2 UNREG GND
TO FU-97 BOARD CN103
(See page 184.)
no mark CAMERA REC mode
*: Impossible to measure the voltage at the marked points.

Be sure to always read "Precautions for replacement of CCD imager block" in page 119 when replacing the CD-53 board, complete, DT-77 board, complete and CCD imager block (IC101 on the CD-53 board and IC001 on the DT-77 board).

- **Signal path**

	VIDEO Signal		
	CHROMA	Y	Y/CHROMA
REC	➡	⇛	⇛

< DIODE >

D501	8-719-404-46	MA110
D502	8-719-404-46	MA110
D503	8-719-404-46	MA110
D504	8-719-404-46	MA110
D651	8-719-976-90	DTZ4. 3A
D651	8-719-976-91	DTZ4. 3B
D652	8-719-977-34	DTZ12

< IC >

IC301	8-759-635-27	M62352GP
IC401	8-752-038-XX	CXA1392R
IC501	8-759-038-85	MC68HC11E9FU-SC400226
IC504	8-759-635-27	M62352GP
IC508	8-759-937-56	S-8054ALB-LM-S
IC509	8-759-509-05	XRU4066BF
IC510	8-759-998-96	LM324D
IC651	8-759-981-82	RC3414M
IC652	8-759-998-96	LM324D
IC653	8-759-500-11	MM1036XFF
IC655	8-759-208-11	TC4053BFHB
IC656	8-759-998-96	LM324D

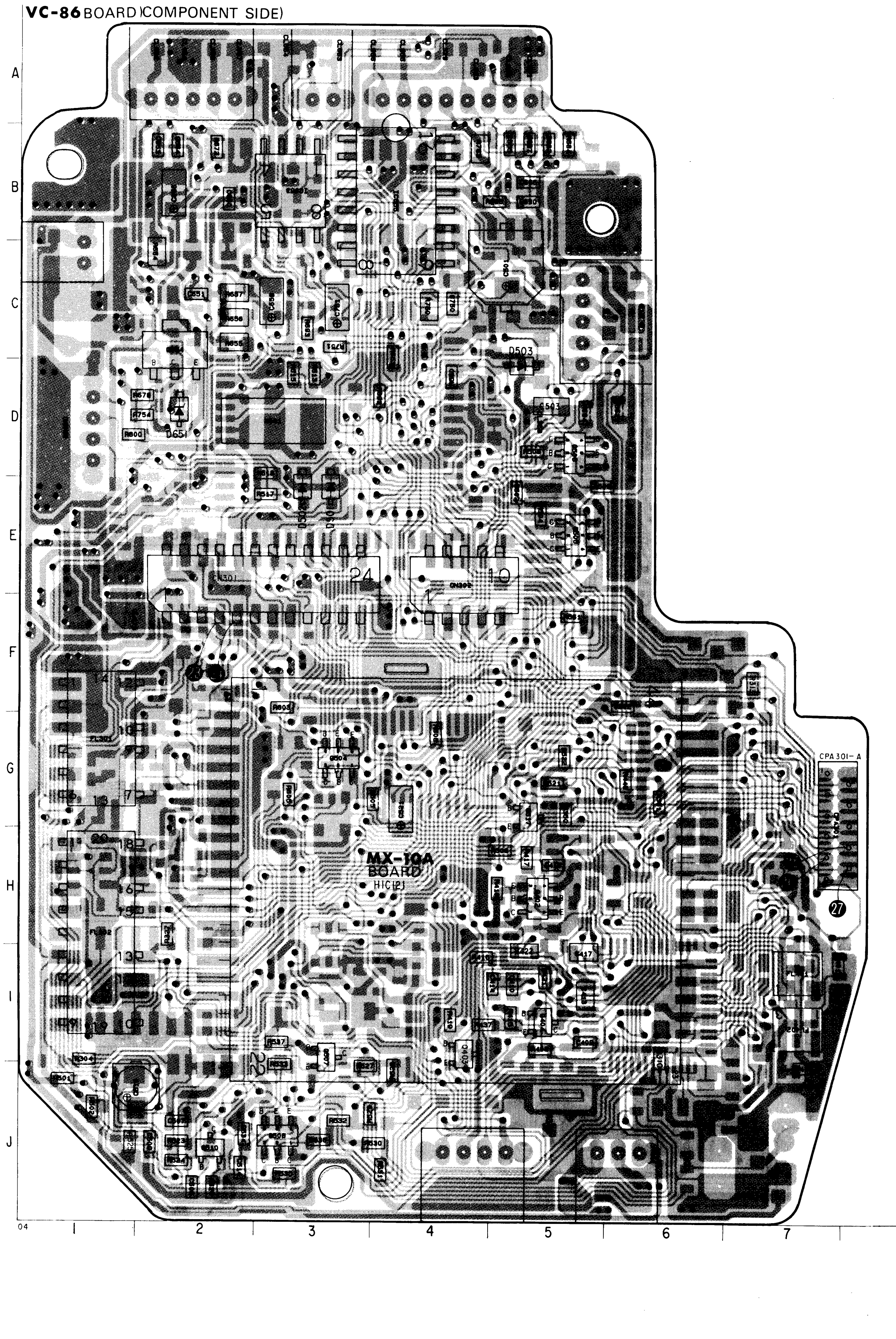
< TRANSISTOR >

Q301	8-729-905-23	2SA1576-R
Q302	8-729-905-23	2SA1576-R
Q303	8-729-402-84	XN4601
Q401	8-729-402-84	XN4601
Q402	8-729-402-84	XN4601
Q403	8-729-905-23	2SA1576-R
Q404	8-729-905-35	2SC4081-R
Q504	8-729-403-10	XN6215
Q505	8-729-403-10	XN6215
Q506	8-729-925-77	IMH6
Q507	8-729-420-50	UN5215
Q508	8-729-402-78	XN6401
Q509	8-729-403-10	XN6215
Q510	8-729-905-35	2SC4081-R
Q513	8-729-402-84	XN4601
Q516	8-729-905-35	2SC4081-R
Q517	8-729-905-23	2SA1576-R
Q652	8-729-402-42	UN5213
Q653	8-729-905-23	2SA1576-R
Q654	8-729-106-60	2SB1115A
Q655	8-729-905-35	2SC4081-R
Q656	8-729-821-88	2SK1332-3

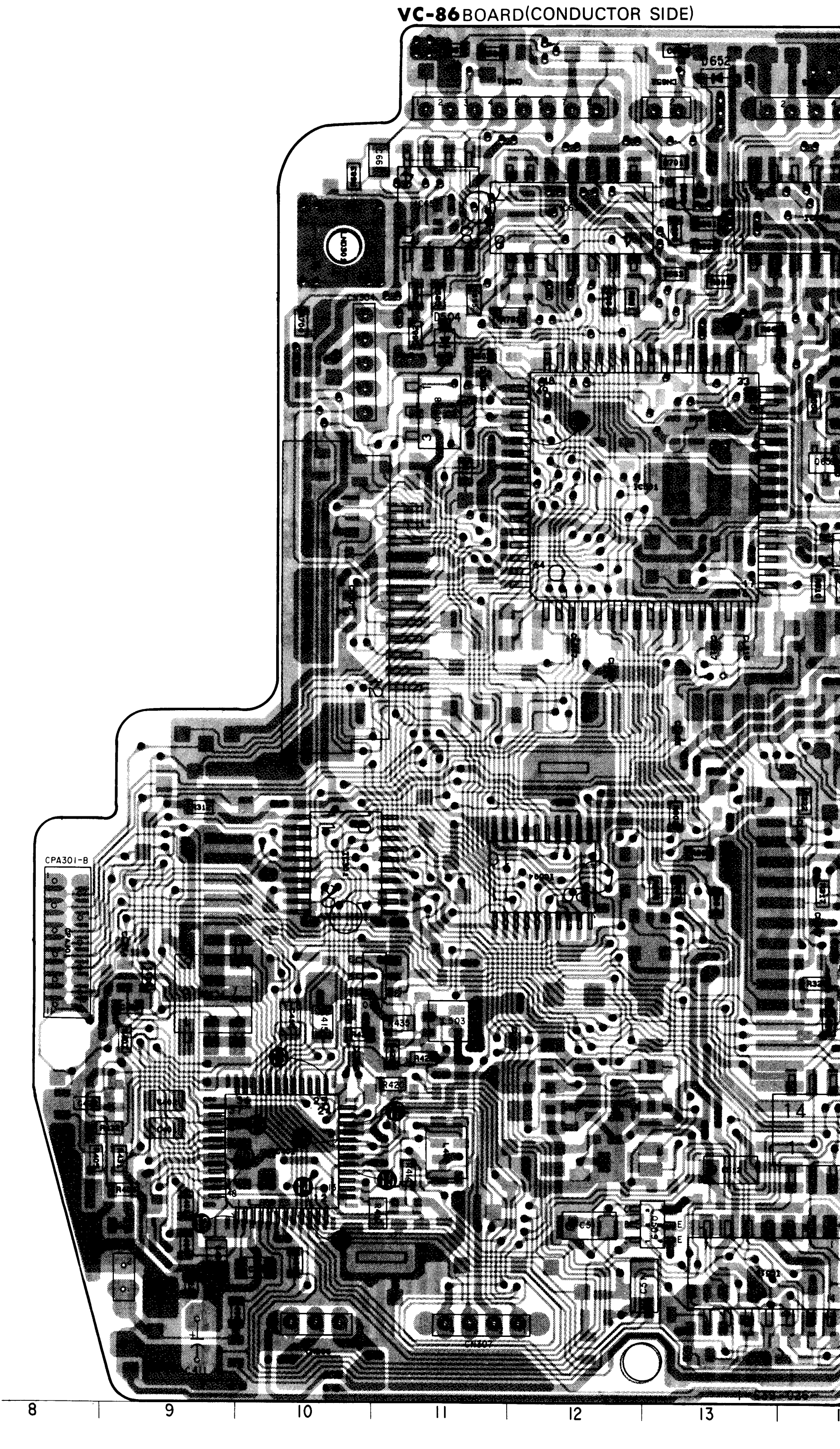
VC-86 (CAMERA PROCESS, ZOOM/FOCUS), CD-53 (CCD IMAGER) PRINTED WIRING BOARDS

—Ref. No. VC-86, CD-53 BOARDS : 1000 series—

VC-86 BOARD (COMPONENT SIDE)



VC-86 BOARD(CONDUCTOR SIDE)

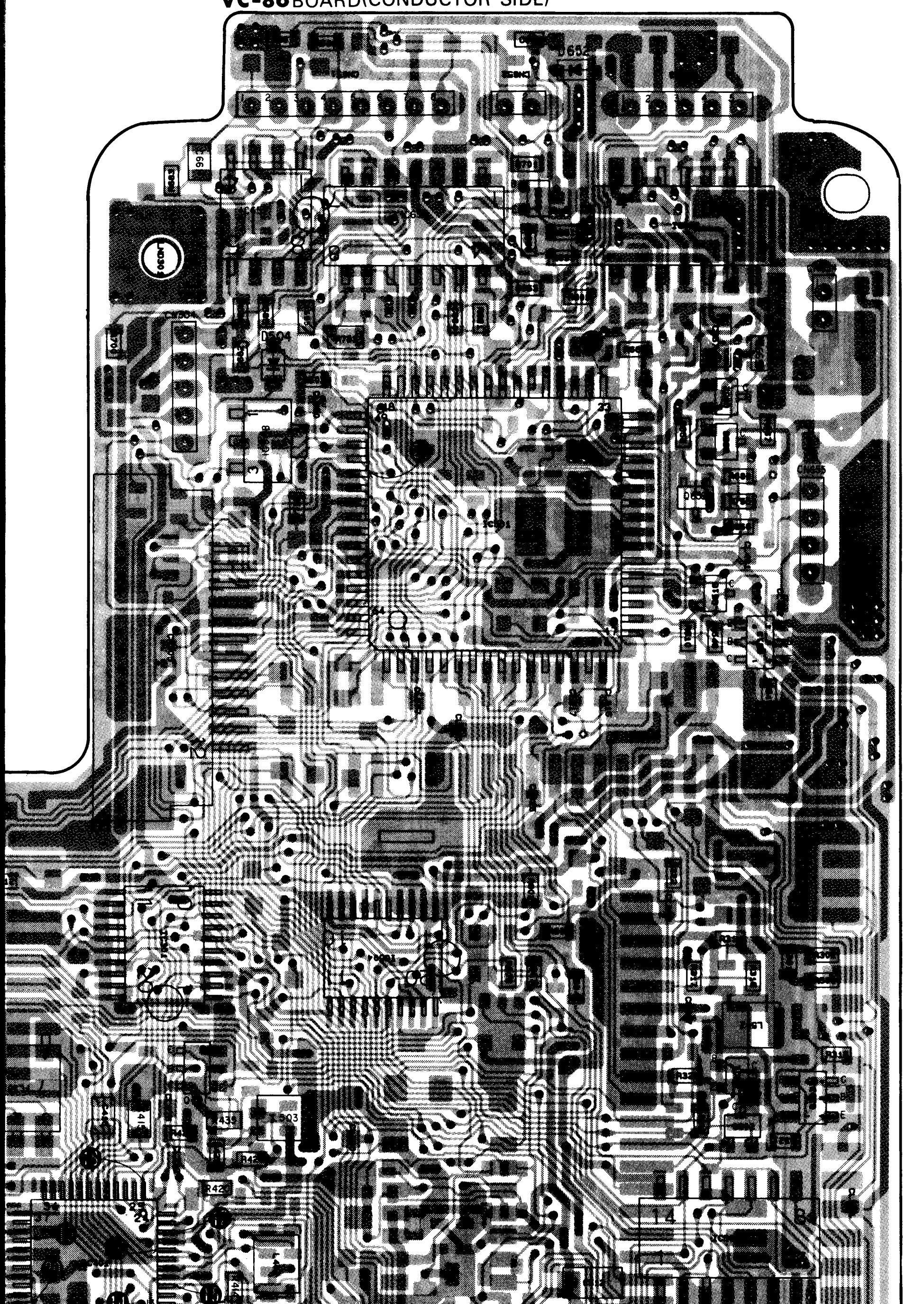


719-404-46	MA110
19-404-46	MA110
719-404-46	MA110
719-404-46	MA110
719-976-90	DTZ4. 3A
719-976-91	DTZ4. 3B
719-977-34	DTZ12
759-635-27	M62352GP
752-038-XX	CXA1392R
759-038-85	MC68HC11E9FU-SC400226
759-635-27	M62352GP
759-937-56	S-8054ALB-LM-S
759-509-05	XRU4066BF
759-998-96	LM324D
759-981-82	RC3414M
759-998-96	LM324D
159-500-11	MM1036XFF
59-208-11	TC4053BFHB
759-998-96	LM324D

< TRANSISTOR >

Q301	8-729-905-23	2SA1576-R
Q302	8-729-905-23	2SA1576-R
Q303	8-729-402-84	XN4601
Q401	8-729-402-84	XN4601
Q402	8-729-402-84	XN4601
Q403	8-729-905-23	2SA1576-R
Q404	8-729-905-35	2SC4081-R
Q504	8-729-403-10	XN6215
Q505	8-729-403-10	XN6215
Q506	8-729-925-77	IMH6
Q507	8-729-420-50	UN5215
Q508	8-729-402-78	XN6401
Q509	8-729-403-10	XN6215
Q510	8-729-905-35	2SC4081-R
Q513	8-729-402-84	XN4601
Q516	8-729-905-35	2SC4081-R
Q517	8-729-905-23	2SA1576-R
Q652	8-729-402-42	UN5213
Q653	8-729-905-23	2SA1576-R
Q654	8-729-106-60	2SB1115A
Q655	8-729-905-35	2SC4081-R
Q656	8-729-821-88	2SK1332-3

VC-86 BOARD(CONDUCTOR SIDE)



< DIODE >

D101	8-719-404-46	MA110
D102	8-719-404-52	MA143
D122	8-719-404-32	MA141WA
D123	8-719-404-46	MA110
D124	8-719-404-32	MA141WA
D125	8-719-949-46	1T32
D128	8-719-404-46	MA110

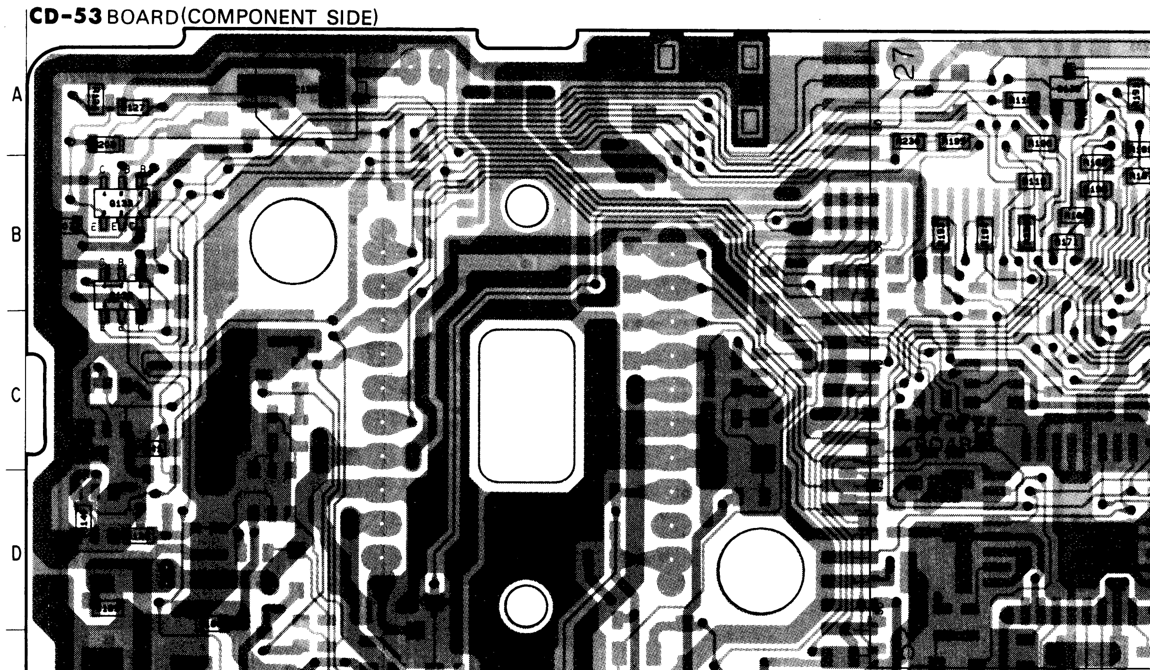
< IC >

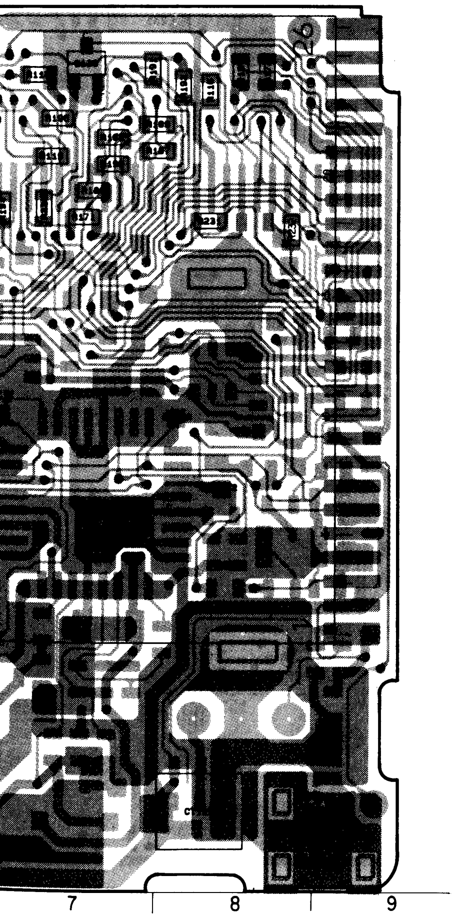
IC121	8-752-326-08	CXD1159Q

< TRANSISTOR >

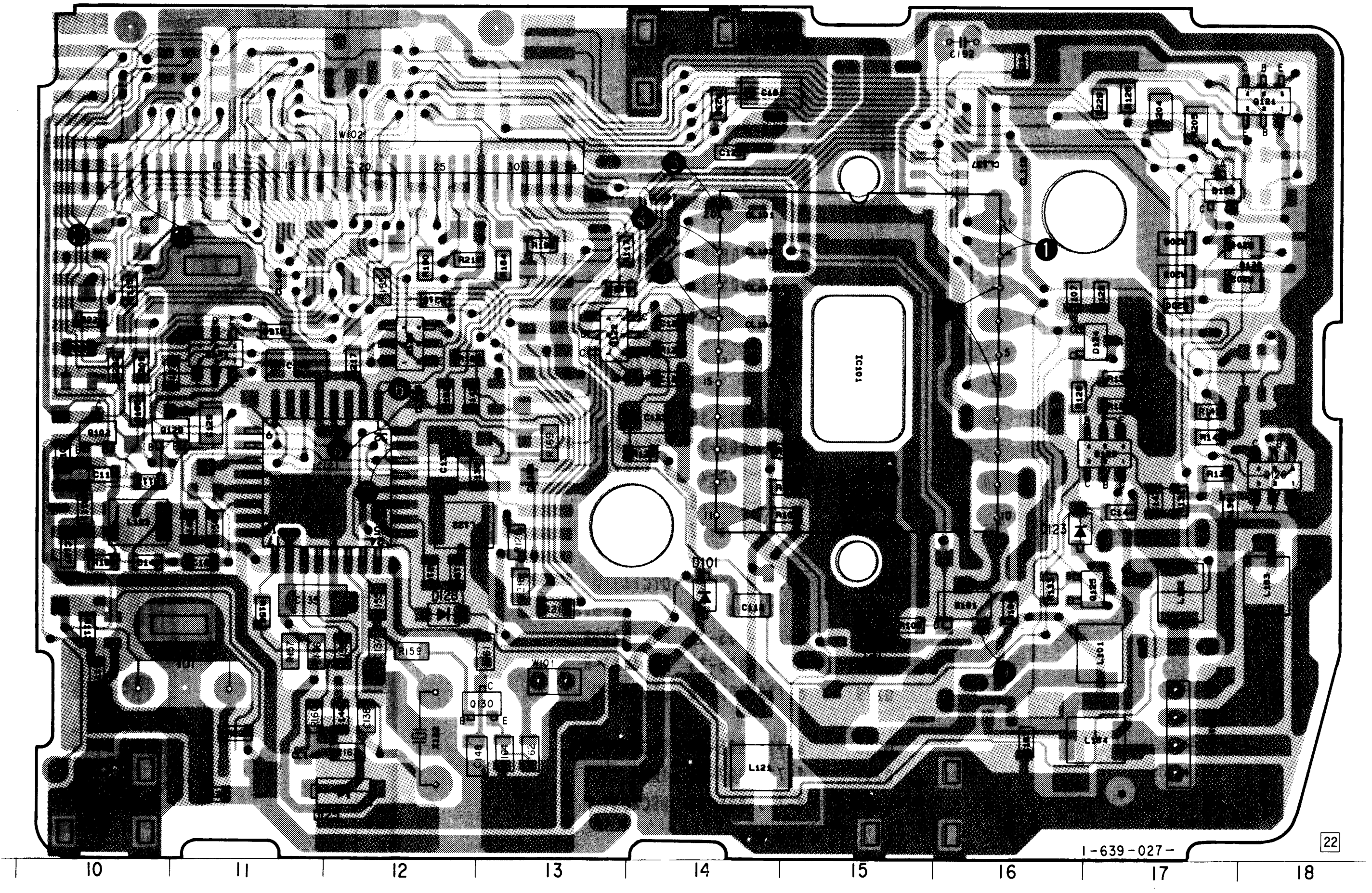
Q101	8-765-420-02	2SK300-3
Q102	8-729-905-35	2SC4081-R
Q121	8-729-402-84	XN4601
Q122	8-729-402-78	XN6401
Q123	8-729-402-19	XN6501
Q125	8-729-905-35	2SC4081-R
Q126	8-729-402-84	XN4601
Q129	8-729-905-23	2SA1576-R
Q130	8-729-905-35	2SC4081-R
Q131	8-729-402-84	XN4601
Q132	8-729-402-84	XN4601
Q133	8-729-402-84	XN4601
Q135	8-729-402-84	XN4601
Q136	8-729-402-45	UN5212

CD-53 BOARD(COMPONENT SIDE)

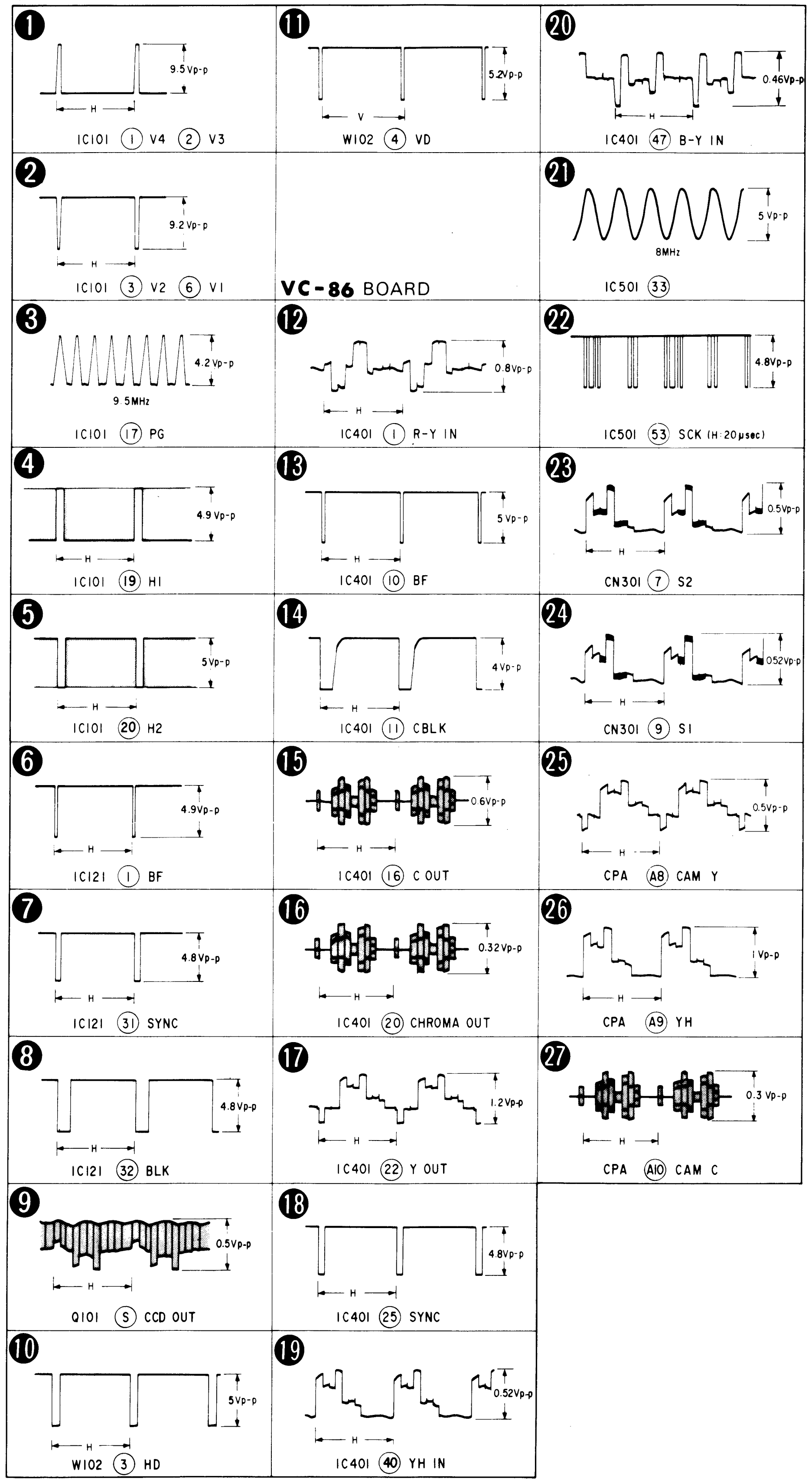




CD-53BOARD(CONDUCTOR SIDE)


W102
IC121
D101
D128
Q130
W101
L124
L123
1-639-027-
22
10
11
12
13
14
15
16
17
18

CD-53 BOARD


1
9.5Vp-p
H
IC101 ① V4 ② V3
2
9.2Vp-p
H
IC101 ③ V2 ⑥ V1
3
4.2Vp-p
9.5MHz
IC101 ⑰ PG
4
4.9Vp-p
H
IC101 ⑲ H1
5
5Vp-p
H
IC101 ⑳ H2
6
4.9Vp-p
H
IC121 ① BF
7
4.8Vp-p
H
IC121 ㉛ SYNC
8
4.8Vp-p
H
IC121 ㉜ BLK
9
0.5Vp-p
H
Q101 Ⓢ CCD OUT
10
5Vp-p
H
W102 ③ HD
11
5.2Vp-p
V
W102 ④ VD
VC-86 BOARD
12
0.8Vp-p
H
IC401 ① R-Y IN
13
5Vp-p
H
IC401 ⑩ BF
14
4Vp-p
H
IC401 ⑪ CBLK
15
0.6Vp-p
H
IC401 ⑯ C OUT
16
0.32Vp-p
H
IC401 ⑳ CHROMA OUT
17
1.2Vp-p
H
IC401 ㉒ Y OUT
18
4.8Vp-p
H
IC401 ㉕ SYNC
19
0.52Vp-p
H
IC401 ㊵ YH IN
20
0.46Vp-p
H
IC401 ㊼ B-Y IN
21
5Vp-p
8MHz
IC501 ㉝
22
4.8Vp-p
IC501 53 SCK (H:20μsec)
23
0.5Vp-p
H
CN301 ⑦ S2
24
0.52Vp-p
H
CN301 ⑨ S1
25
0.5Vp-p
H
CPA A8 CAM Y
26
1Vp-p
H
CPA A9 YH
27
0.3Vp-p
H
CPA A10 CAM C

< DIODE >

D001	8-719-941-86	DAN202U
D002	8-719-404-46	MA110
D101	8-719-949-46	1T32
D202	8-719-941-86	DAN202U
D203	8-719-941-86	DAN202U
D205	8-719-404-46	MA110
D208	8-719-941-86	DAN202U
D210	8-719-941-86	DAN202U
D211	8-719-941-86	DAN202U

< IC >

IC001	8-752-830-81	CXP80116-837Q
IC003	8-759-998-98	LM358D
IC004	8-759-148-05	CXA8010M
IC005	8-759-823-65	MCD002AM
IC006	8-759-990-55	CXA8006M
IC007	8-759-008-95	MC14028BF
IC008	8-759-748-72	BR93C46F
IC101	8-759-970-80	MB673198U
IC102	8-759-153-41	uPD6451AGT-611-E1
IC104	8-759-234-20	TC7S08F
IC150	8-752-035-48	CXA1204Q
IC201	8-759-012-00	MC10H116M
IC202	8-759-998-92	LM393D
IC204	8-759-998-32	CXD2107M
IC205	8-759-148-49	CXA1443N

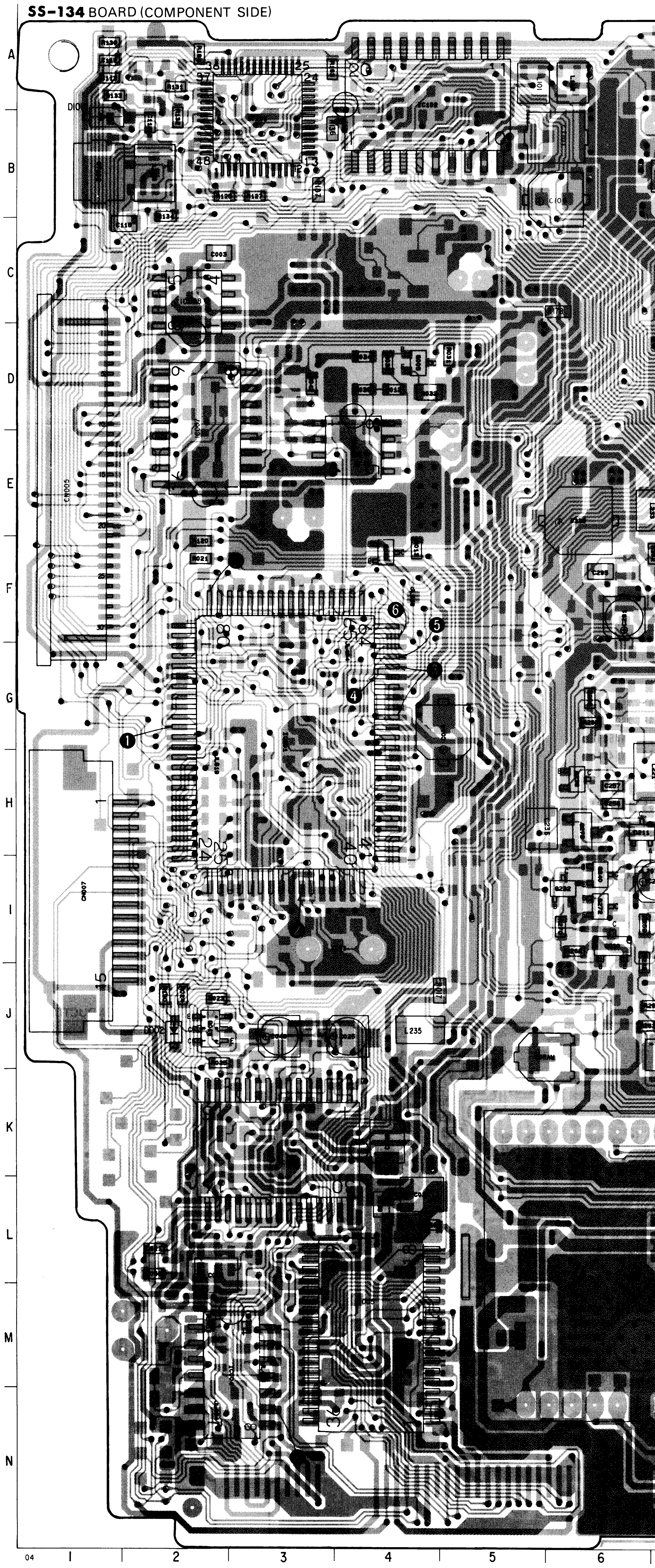
< TRANSISTOR >

Q001	8-729-907-00	DTC114EU
Q002	8-729-905-12	DTA144EU
Q003	8-729-905-18	DTC144EU
Q004	8-729-820-47	2SB1202FAT
Q005	8-729-905-35	2SC4081-R
Q007	8-729-905-35	2SC4081-R
Q008	8-729-905-35	2SC4081-R
Q009	8-729-905-35	2SC4081-R
Q010	8-729-907-03	FMG5
Q011	8-729-905-18	DTC144EU
Q012	8-729-905-18	DTC144EU
Q014	8-729-822-48	FC101
Q017	8-729-907-03	FMG5
Q018	8-729-905-18	DTC144EU
Q023	8-729-921-08	DTC144TU
Q150	8-729-905-23	2SA1576-R
Q151	8-729-905-18	DTC144EU
Q152	8-729-905-35	2SC4081-R
Q153	8-729-905-23	2SA1576-R
Q202	8-729-905-35	2SC4081-R
Q203	8-729-905-35	2SC4081-R
Q213	8-729-216-22	2SA1162G
Q214	8-729-119-76	2SA1175-HFE
Q215	8-729-216-22	2SA1162G
Q217	8-729-102-07	2SC2223-F13
Q218	8-729-905-35	2SC4081-R
Q219	8-729-905-35	2SC4081-R
Q221	8-729-905-35	2SC4081-R
Q222	8-729-907-00	DTC114EU
Q223	8-729-905-35	2SC4081-R
Q224	8-729-904-07	FMG2
Q225	8-729-905-45	DTA143EU
Q227	8-729-905-35	2SC4081-R
Q229	8-729-141-48	2SB624-BV345
Q230	8-729-141-48	2SB624-BV345
Q231	8-729-905-18	DTC144EU
Q232	8-729-905-18	DTC144EU
Q233	8-729-102-07	2SC2223-F13
Q234	8-729-102-07	2SC2223-F13
Q238	8-729-117-31	2SC4177-L5
Q239	8-729-905-18	DTC144EU
Q240	8-729-905-18	DTC144EU
Q242	8-729-117-31	2SC4177-L5
Q243	8-729-905-18	DTC144EU
Q244	8-729-140-63	2SA1611-M5
Q245	8-729-117-31	2SC4177-L5
Q246	8-729-905-18	DTC144EU
Q247	8-729-905-35	2SC4081-R
Q248	8-729-903-10	FMW1
Q249	8-729-905-18	DTC144EU
Q250	8-729-905-12	DTA144EU
Q251	8-729-905-35	2SC4081-R
Q252	8-729-102-07	2SC2223-F13
Q254	8-729-905-35	2SC4081-R
Q255	8-729-904-07	FMG2
Q256	8-729-905-12	DTA144EU
Q257	8-729-905-18	DTC144EU
Q258	8-729-903-10	FMW1
Q259	8-729-905-35	2SC4081-R
Q260	8-729-905-35	2SC4081-R
Q261	8-729-905-23	2SA1576-R
Q262	8-729-905-23	2SA1576-R
Q263	8-729-907-26	IMX1
Q265	8-729-905-35	2SC4081-R
Q266	8-729-905-35	2SC4081-R
Q267	8-729-905-35	2SC4081-R
Q268	8-729-905-23	2SA1576-R
Q269	8-729-907-26	IMX1
Q270	8-729-905-12	DTA144EU
Q272	8-729-922-94	DTC143TU
Q273	8-729-141-48	2SB624-BV345
Q277	8-729-905-35	2SC4081-R
Q278	8-729-905-35	2SC4081-R
Q279	8-729-905-18	DTC144EU
Q280	8-729-905-35	2SC4081-R
Q291	8-729-907-26	IMX1
Q295	8-729-905-35	2SC4081-R

SS-134 (R/P AMP, SERVO, SYSTEM CONTROL) PRINTED WIRING BOARD

—Ref. No. SS-134 BOARD: 2000 series—

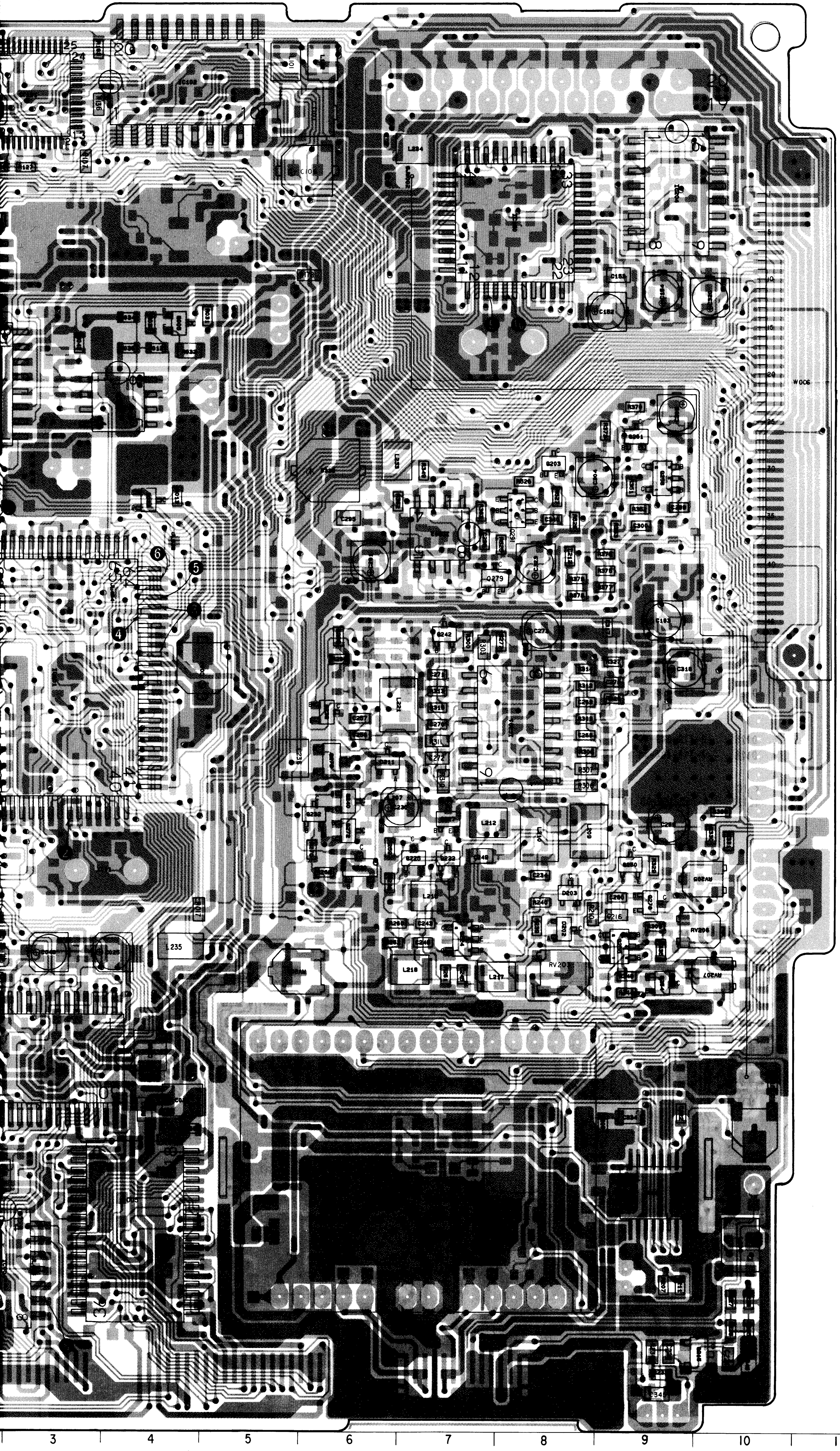
SS-134 BOARD (COMPONENT SIDE)



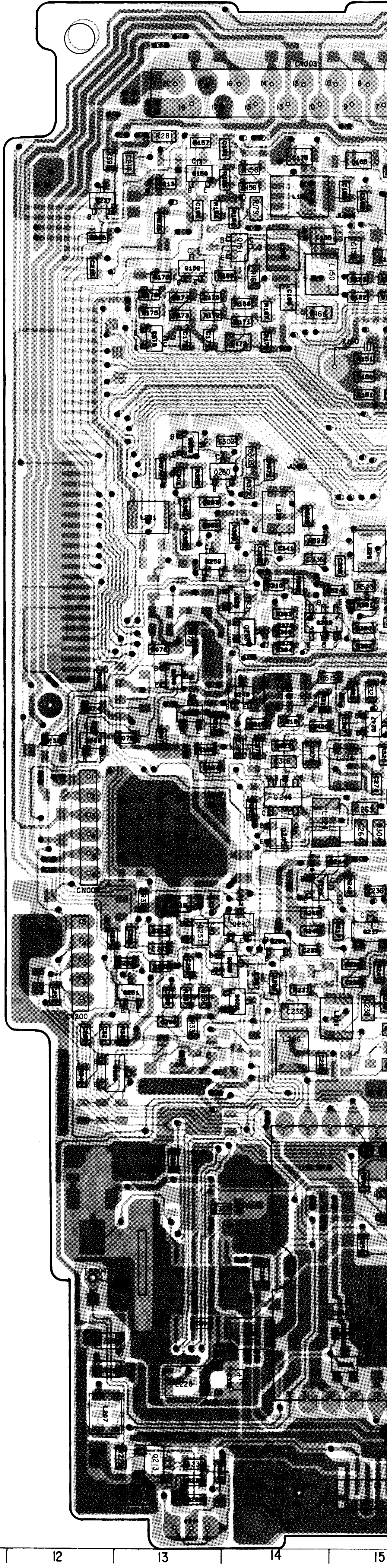
SYSTEM CONTROL) PRINTED WIRING BOARD

0 series—

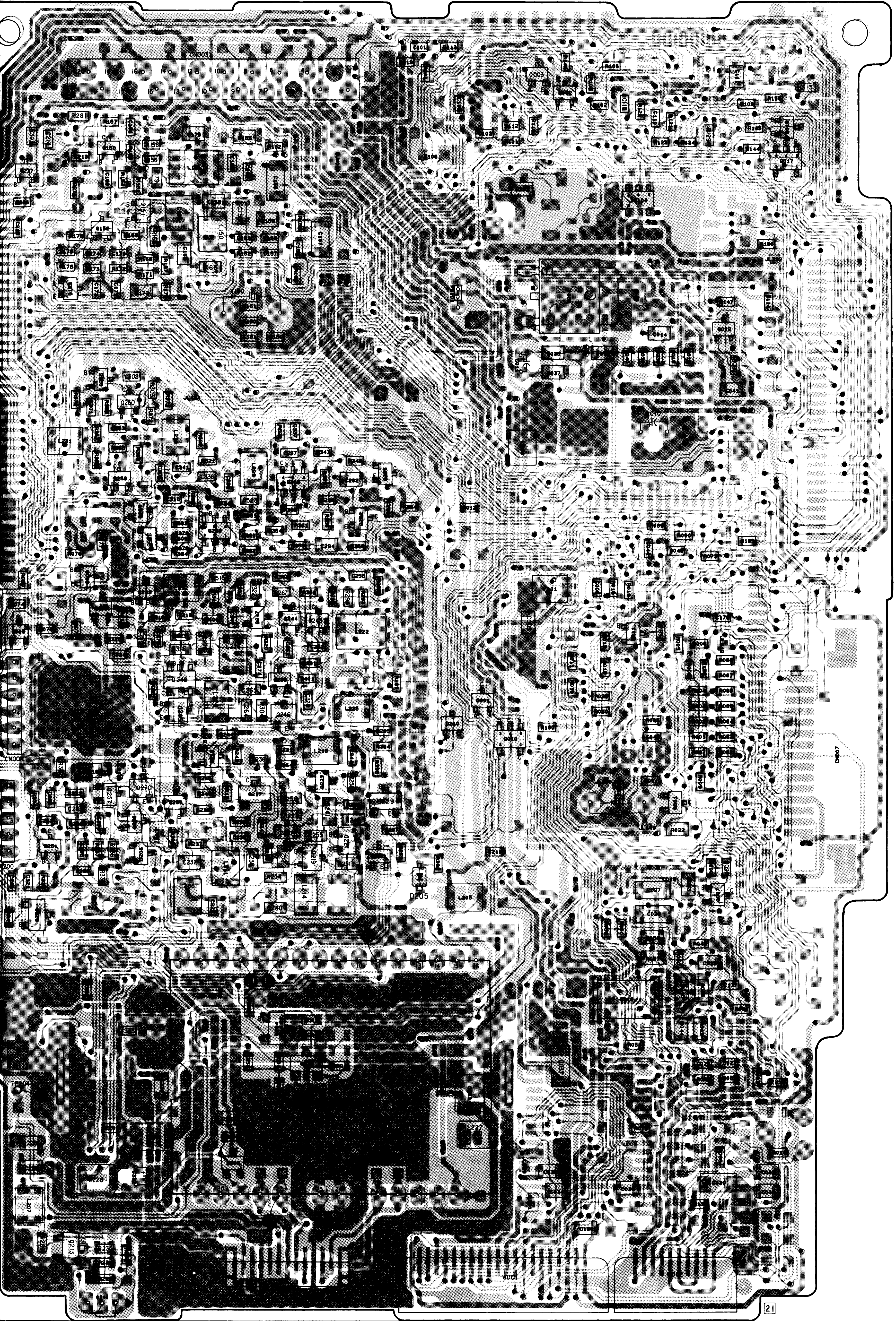
T SIDE)


3
4
5
6
7
8
9
10
11

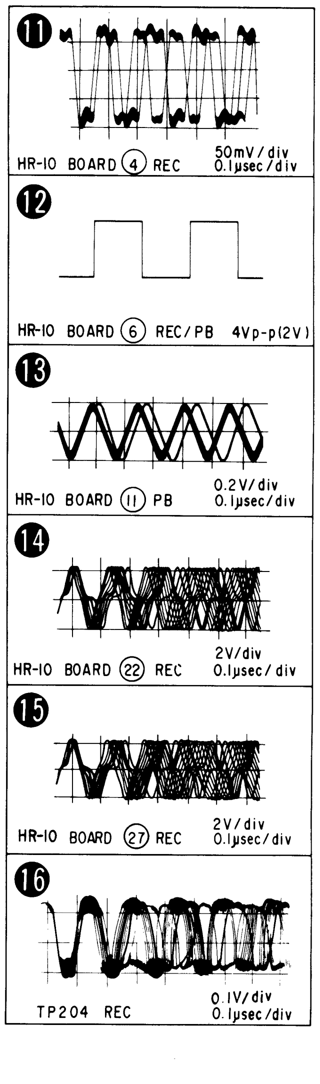
SS-134 BOARD (CONDUCTOR SIDE)


CN003
12
13
14
15

-134 BOARD (CONDUCTOR SIDE)

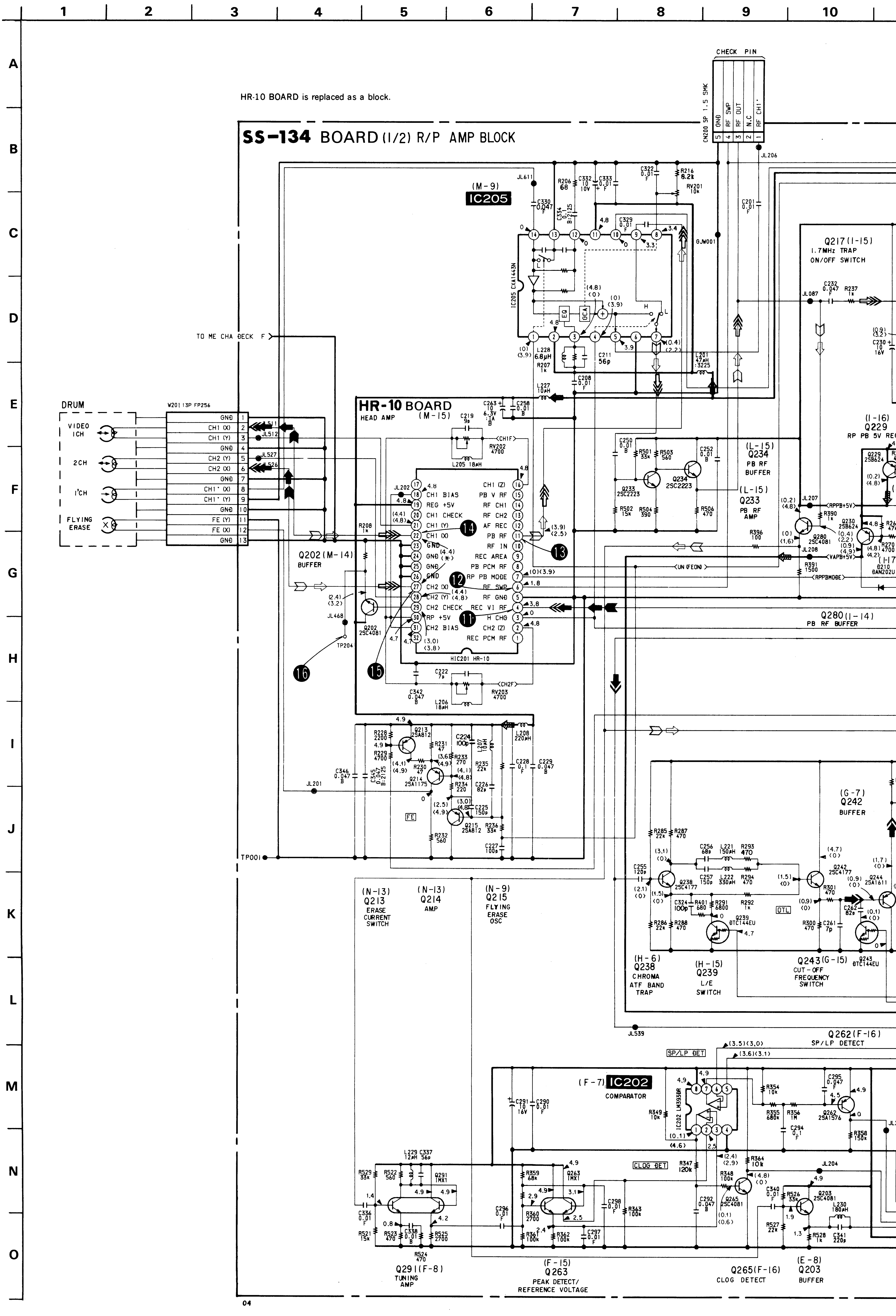

CN003
D205
L205
L227
TP204
CN007
W001
21
13
14
15
16
17
18
19
20
21

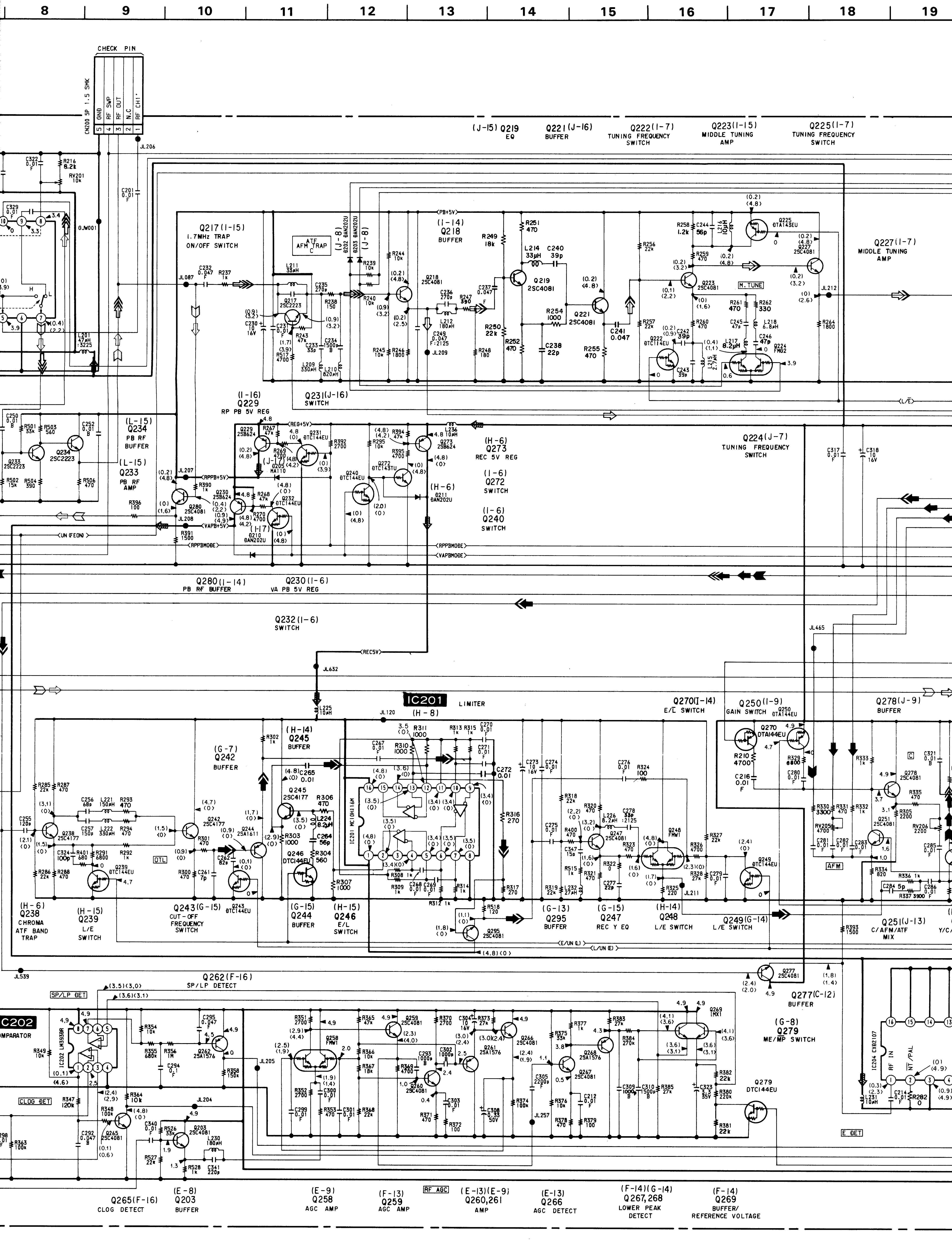
SS-134 BOARD (RP BLOCK)

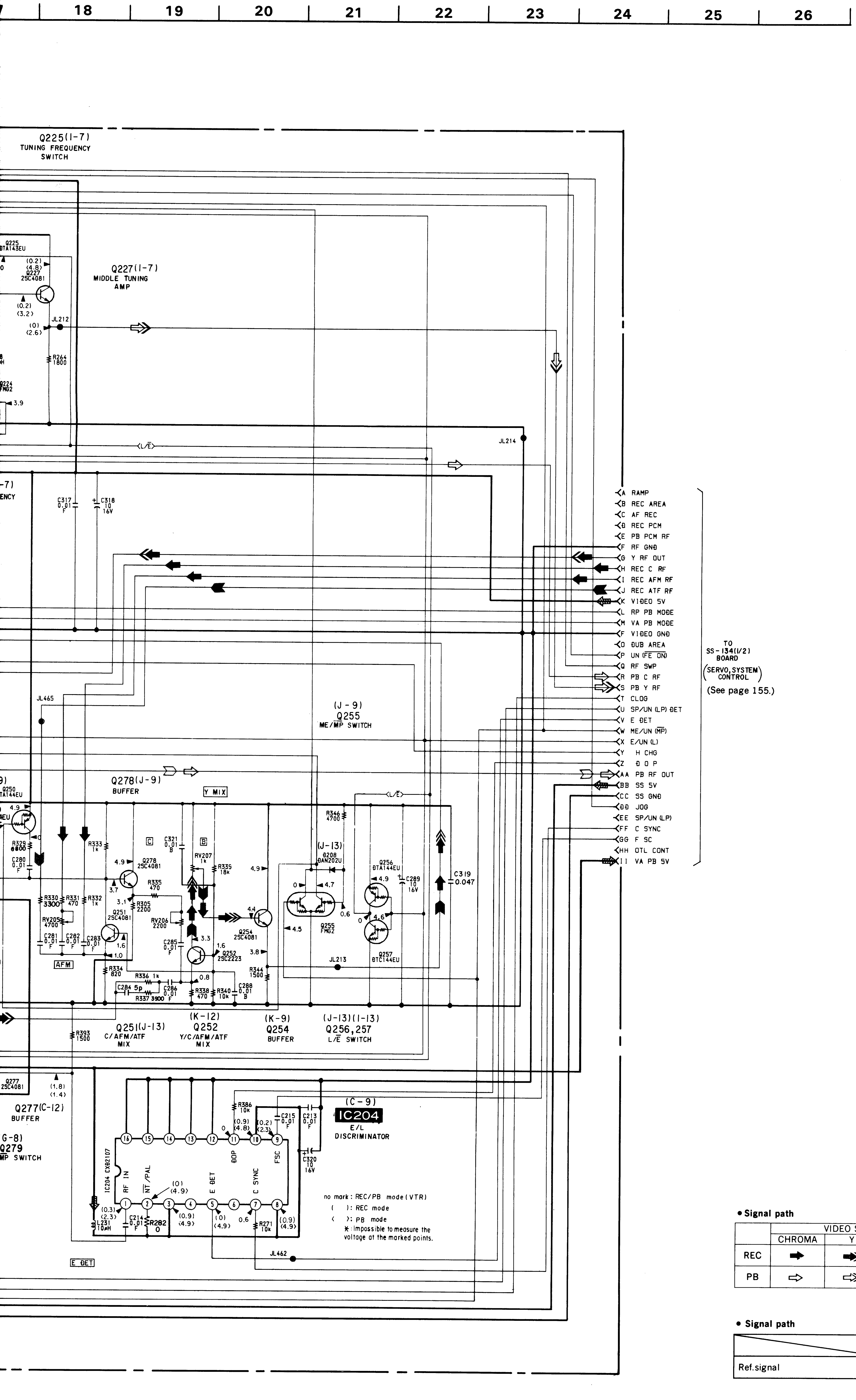


SS-134 (R/P AMP, SERVO, SYSTEM CONTROL) SCHEMATIC DIAGRAM

—Ref. No. SS-134 BOARD: 2000 series—


HR-10 BOARD is replaced as a block.
SS-134 BOARD (1/2) R/P AMP BLOCK
CHECK PIN
CN200 5P 1.5 SMK
GND
RF SWP
RF OUT
N.C
RF CH1'
(M-9) IC205
IC205 CXA1443N
TO ME CHA DECK F
DRUM
VIDEO 1CH
2CH
1'CH
FLYING ERASE
W201 13P FP256
HR-10 BOARD
HEAD AMP (M-15)
HIC201 HR-10
Q202 (M-14) BUFFER
Q217 (I-15) 1.7MHz TRAP ON/OFF SWITCH
(I-16) Q229 RP PB 5V REG
(L-15) Q234 PB RF BUFFER
(L-15) Q233 PB RF AMP
Q280 (I-14) PB RF BUFFER
(G-7) Q242 BUFFER
(N-13) Q213 ERASE CURRENT SWITCH
(N-13) Q214 AMP
(N-9) Q215 FLYING ERASE OSC
(H-6) Q238 CHROMA ATF BAND TRAP
(H-15) Q239 L/E SWITCH
Q243 (G-15) CUT-OFF FREQUENCY SWITCH
Q262 (F-16) SP/LP DETECT
(F-7) IC202 COMPARATOR
IC202 LM393BR
SP/LP DET
CLOG DET
Q291 (F-8) TUNING AMP
(F-15) Q263 PEAK DETECT/ REFERENCE VOLTAGE
Q265 (F-16) CLOG DETECT
(E-8) Q203 BUFFER
TP001
TP204
JL201
04


8
9
10
11
12
13
14
15
16
17
18
19
CHECK PIN
CN200 SP 1.5 SMK
GND
RF SWP
RF OUT
N.C
RF CH1'
(J-15) Q219 EQ
Q221(J-16) BUFFER
Q222(I-7) TUNING FREQUENCY SWITCH
Q223(I-15) MIDDLE TUNING AMP
Q225(I-7) TUNING FREQUENCY SWITCH
Q217(I-15) 1.7MHz TRAP ON/OFF SWITCH
ATF AFM TRAP
(I-14) Q218 BUFFER
Q227(I-7) MIDDLE TUNING AMP
M.TUNE
Q231(J-16) SWITCH
(I-16) Q229 RP PB 5V REG
(L-15) Q234 PB RF BUFFER
(L-15) Q233 PB RF AMP
(H-6) Q273 REC 5V REG
(I-6) Q272 SWITCH
(I-6) Q240 SWITCH
(H-6)
Q224(J-7) TUNING FREQUENCY SWITCH
Q280(I-14) PB RF BUFFER
Q230(I-6) VA PB 5V REG
Q232(I-6) SWITCH
IC201 LIMITER (H-8)
IC201 MC10H116M
Q270(I-14) E/L SWITCH
Q250(I-9) GAIN SWITCH
Q278(J-9) BUFFER
(H-14) Q245 BUFFER
(G-7) Q242 BUFFER
OTL
AFM
(H-6) Q238 CHROMA ATF BAND TRAP
(H-15) Q239 L/E SWITCH
Q243(G-15) CUT-OFF FREQUENCY SWITCH
(G-15) Q244 BUFFER
(H-15) Q246 E/L SWITCH
(G-13) Q295 BUFFER
(G-15) Q247 REC Y EQ
(H-14) Q248 L/E SWITCH
Q249(G-14) L/E SWITCH
Q251(J-13) C/AFM/ATF MIX
Q262(F-16) SP/LP DETECT
SP/LP DET
IC202 COMPARATOR
IC202 LM393PR
CLOG DET
Q277(C-12) BUFFER
(G-8) Q279 ME/MP SWITCH
Q279 DTC144EU
IC204 CX8210
E DET
RF AGC
Q265(F-16) CLOG DETECT
(E-8) Q203 BUFFER
(E-9) Q258 AGC AMP
(F-13) Q259 AGC AMP
(E-13)(E-9) Q260,261 AMP
(E-13) Q266 AGC DETECT
(F-14)(G-14) Q267,268 LOWER PEAK DETECT
(F-14) Q269 BUFFER/ REFERENCE VOLTAGE


18
19
20
21
22
23
24
25
26
Q225(I-7)
TUNING FREQUENCY SWITCH
Q227(I-7)
MIDDLE TUNING AMP
Q225 DTA143EU
Q227 2SC4081
JL212
R264 1800
JL214
(L/E)
C317 0.01 F
C318 10 16V
JL465
(J-9)
Q255
ME/MP SWITCH
Q278(J-9)
BUFFER
Y MIX
Q250 DTA144EU
Q278 2SC4081
Q251 2SC4081
Q254 2SC4081
Q252 2SC2223
Q208 DAN202U
Q255 FMG2
Q256 DTA144EU
Q257 DTC144EU
RV205 4700
RV206 2200
RV207 1k
R329 6800
R330 3300
R331 470
R332 1k
R333 1k
R334 820
R335 470
R305 2200
R336 1k
R337 3900
R338 470
R339 18k
R340 10k
R344 1500
R346 4700
C280 0.01 F
C281 0.01 F
C282 0.01 F
C283 0.01 F
C284 5p
C285 0.01 F
C286 0.01 F
C288 0.01 B
C289 10 16V
C319 0.047
C321 0.01 B
JL213
AFM
(J-13)
Q251(J-13)
C/AFM/ATF MIX
(K-12)
Q252
Y/C/AFM/ATF MIX
(K-9)
Q254
BUFFER
(J-13)(I-13)
Q256,257
L/E SWITCH
R393 1500
Q277 2SC4081
Q277(C-12)
BUFFER
(G-8)
Q279
MP SWITCH
(C-9)
IC204
E/L DISCRIMINATOR
IC204 CXB2107
RF IN
NT/PAL
E DET
DOP
C SYNC
FSC
R386 10k
C215 0.01 F
C213 0.01 F
C320 10 16V
L231 10μH
C214 0.01 F
R282 0
R271 10k
JL462
E DET
A RAMP
B REC AREA
C AF REC
D REC PCM
E PB PCM RF
F RF GND
G Y RF OUT
H REC C RF
I REC AFM RF
J REC ATF RF
K VIDEO 5V
L RP PB MODE
M VA PB MODE
F VIDEO GND
O DUB AREA
P UN (FE ON)
Q RF SWP
R PB C RF
S PB Y RF
T CLOG
U SP/UN (LP) DET
V E DET
W ME/UN (MP)
X E/UN (L)
Y H CHG
Z D O P
AA PB RF OUT
BB SS 5V
CC SS GND
DD JOG
EE SP/UN (LP)
FF C SYNC
GG F SC
HH OTL CONT
II VA PB 5V
TO SS-134(1/2) BOARD
(SERVO, SYSTEM CONTROL)
(See page 155.)

no mark : REC/PB mode (VTR)
( ) : REC mode
< > : PB mode
✱ : Impossible to measure the voltage at the marked points.

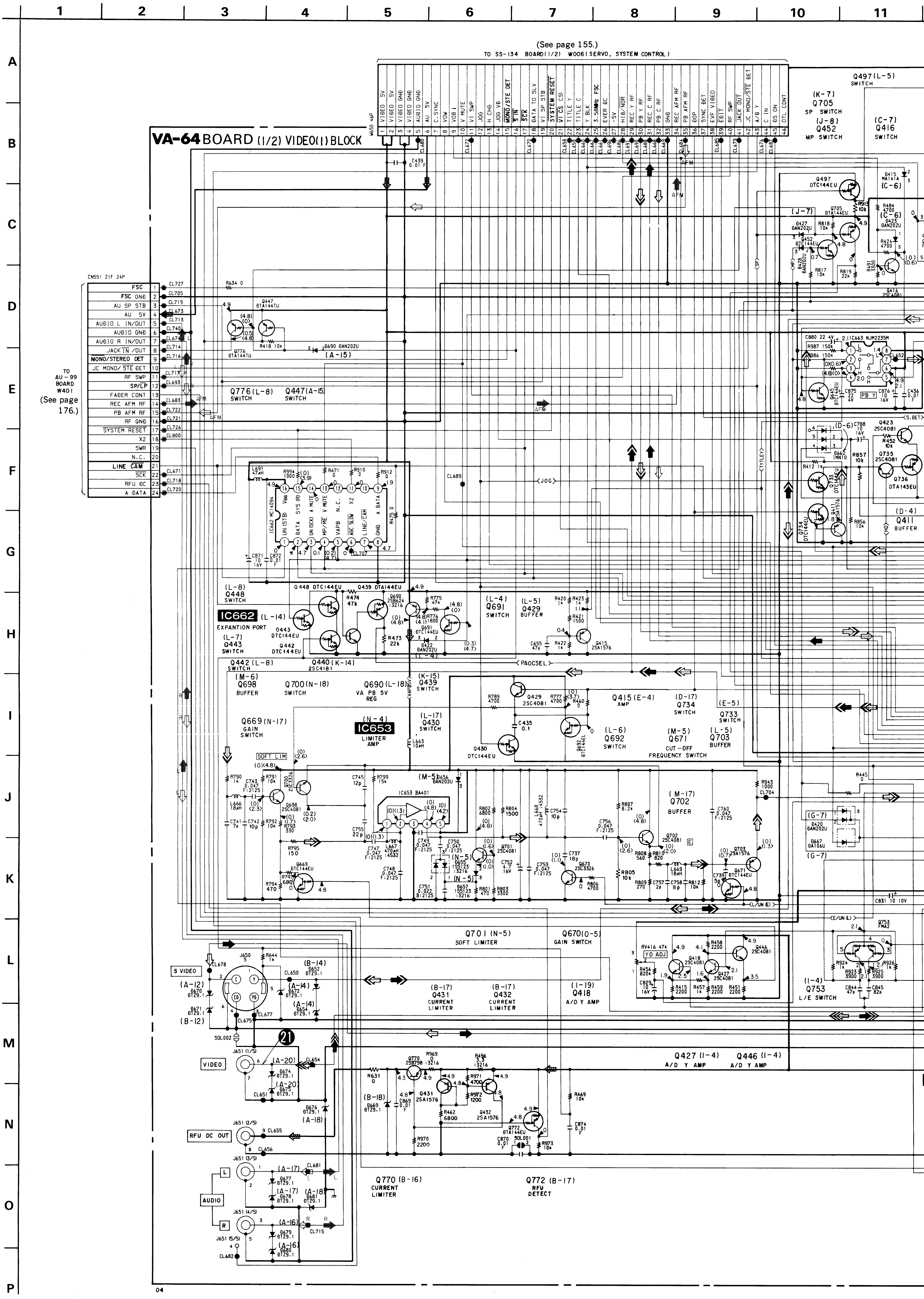
- **Signal path**

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

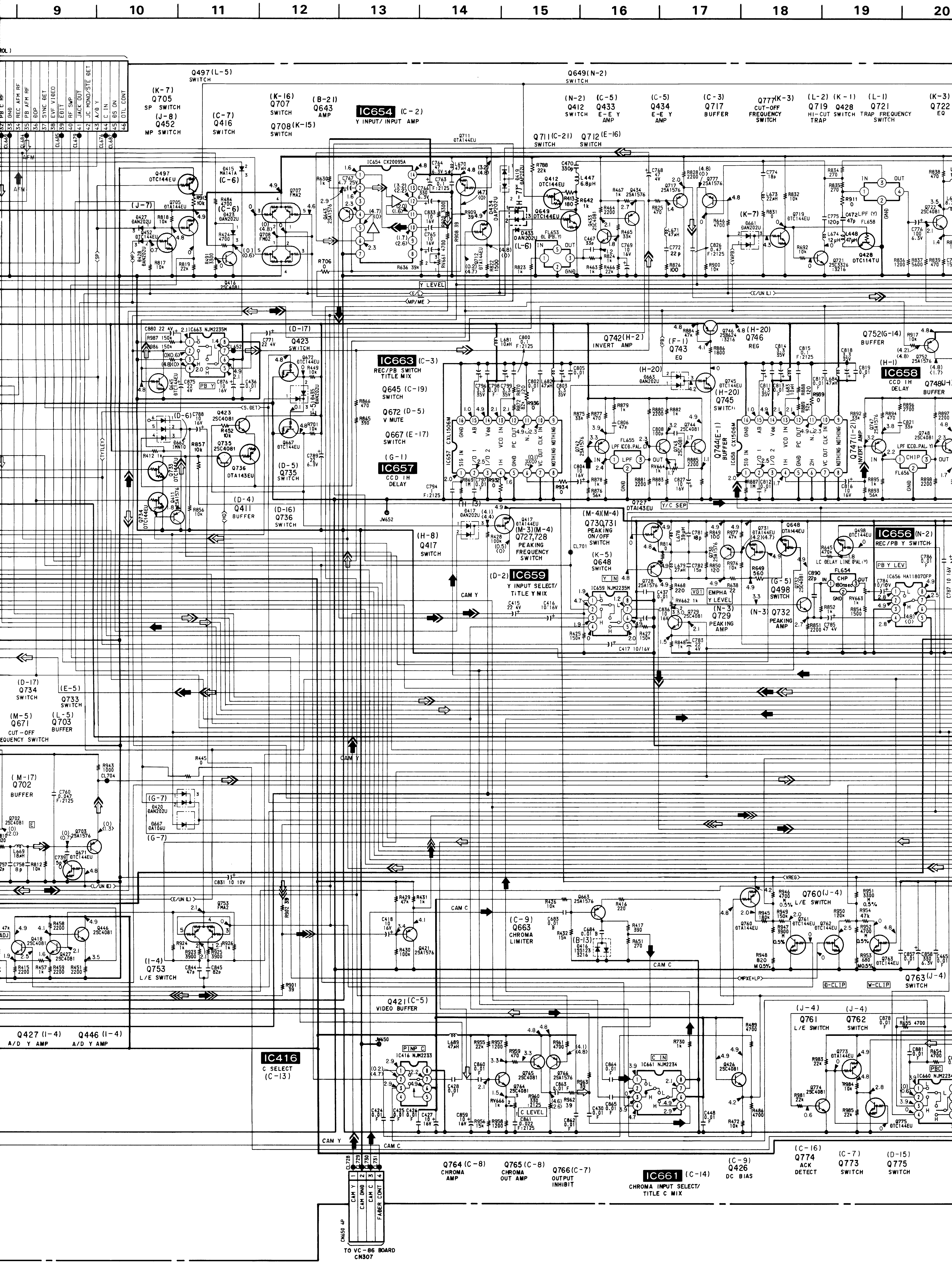
- **Signal path**

	REC	REC/PB	PB
Ref.signal	➤	➤	▷

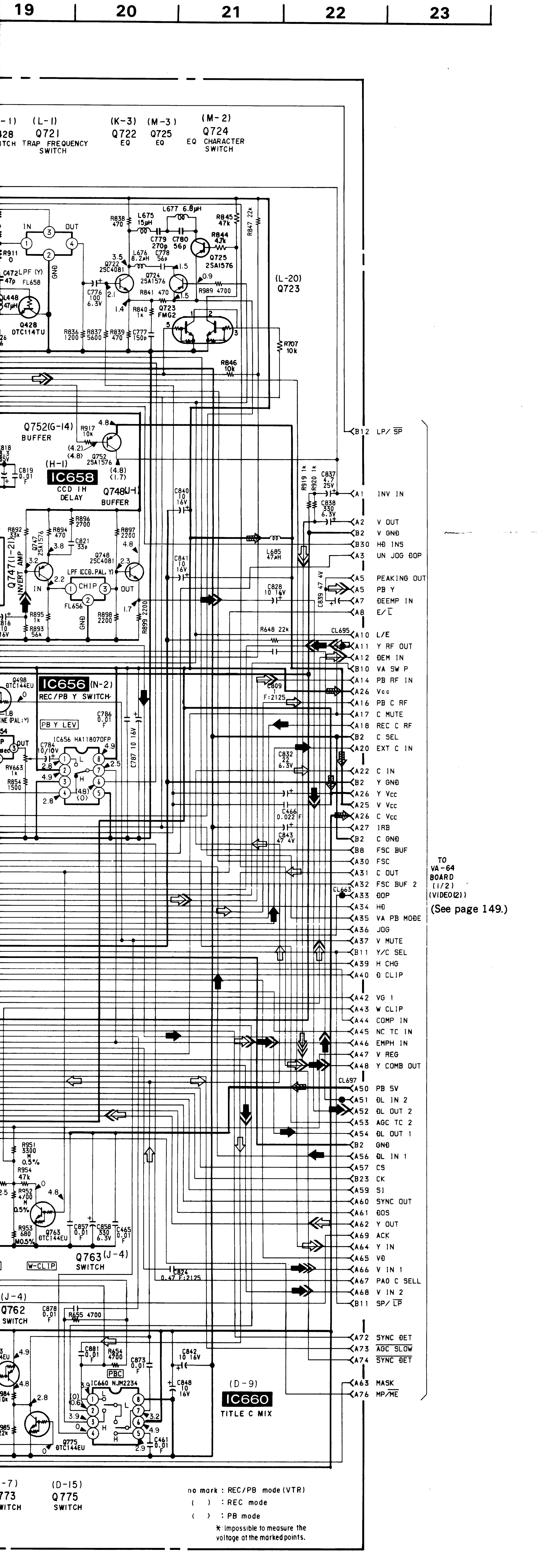
VA-64 (VIDEO PROCESS) SCHEMATIC DIAGRAM
—Ref. No. VA-64 BOARD : 3000 series—


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
(See page 155.)
TO SS-134 BOARD(1/2) W006(SERVO, SYSTEM CONTROL)
W650 46P
VA-64 BOARD (1/2) VIDEO(1) BLOCK
CN551 ZIF 24P
FSC
FSC GND
AU SP STB
AU 5V
AUDIO L IN/OUT
AUDIO GND
AUDIO R IN/OUT
JACK IN /OUT
MONO/STEREO DET
JC MONO/ STE DET
RF SWP
SP/LP
FADER CONT
REC AFM RF
PB AFM RF
RF GND
SYSTEM RESET
X2
SWR
N.C.
LINE CAM
SCK
RFU DC
A DATA
TO AU-99 BOARD W401 (See page 176.)
Q776(L-8) SWITCH
Q447(A-15) SWITCH
IC662 MC14094
IC662 (L-14) EXPANTION PORT
(L-7) Q443 SWITCH
(L-8) Q448 SWITCH
Q442(L-8) SWITCH
Q440(K-14) 2SC4181
Q690(L-18) VA PB 5V REG
(K-15) Q439 SWITCH
(M-6) Q698 BUFFER
Q700(N-18) SWITCH
Q669(N-17) GAIN SWITCH
(N-4) IC653 LIMITER AMP
(L-17) Q430 SWITCH
(L-4) Q691 SWITCH
(L-5) Q429 BUFFER
Q415(E-4) AMP
(D-17) Q734 SWITCH
(E-5) Q733 SWITCH
(L-6) Q692 SWITCH
(M-5) Q671 CUT-OFF FREQUENCY SWITCH
(L-5) Q703 BUFFER
(M-17) Q702 BUFFER
IC653 BA401
SOFT LIM
Q701 (N-5) SOFT LIMITER
Q670(0-5) GAIN SWITCH
(B-17) Q431 CURRENT LIMITER
(B-17) Q432 CURRENT LIMITER
(I-19) Q418 A/D Y AMP
Q427 (I-4) A/D Y AMP
Q446 (I-4) A/D Y AMP
YD ADJ
(I-4) Q753 L/E SWITCH
Q770 (B-16) CURRENT LIMITER
Q772 (B-17) RFU DETECT
S VIDEO
VIDEO
RFU DC OUT
AUDIO
J650
J651 (1/5)
J651 (2/5)
J651 (3/5)
J651 (4/5)
J651 (5/5)
SOL002
SOL001
21
Q497(L-5) SWITCH
(K-7) Q705 SP SWITCH
(J-8) Q452 MP SWITCH
(C-7) Q416 SWITCH
IC663 NJM2235M
(D-4) Q411 BUFFER
Q736 DTA143EU
Q735 2SC4081
Q423 2SC4081
AFM
JOG
PAOCSEL
04

VIDEO (1) VIDEO (1)


9
10
11
12
13
14
15
16
17
18
19
20
Q497(L-5) SWITCH
Q649(N-2) SWITCH
(K-7) Q705 SP SWITCH
(J-8) Q452 MP SWITCH
(C-7) Q416 SWITCH
(K-16) Q707 SWITCH
Q708(K-15) SWITCH
(B-21) Q643 AMP
IC654 (C-2) Y INPUT/INPUT AMP
IC654 CX20095A
(N-2) Q412 SWITCH
(C-5) Q433 E-E Y AMP
(C-5) Q434 E-E Y AMP
(C-3) Q717 BUFFER
Q777(K-3) CUT-OFF FREQUENCY SWITCH
(L-2) Q719 HI-CUT SWITCH
(K-1) Q428 TRAP
(L-1) Q721 TRAP FREQUENCY SWITCH
(K-3) Q722 EQ
Q711(C-21) SWITCH
Q712(E-16) SWITCH
FL653 DL (PB.Y)
FL658 LPF (Y)
Y LEVEL
E/E
MP/ME
E/UN (L)
IC663 NJM2235M
(D-17) Q423 SWITCH
IC663 (C-3) REC/PB SWITCH TITLE MIX
Q645 (C-19) SWITCH
Q672 (D-5) V MUTE
Q667 (E-17) SWITCH
(G-1) IC657 CCD 1H DELAY
IC657 CXL1506M
Q742(H-2) INVERT AMP
(F-1) Q743 EQ
Q746 (H-20) REG
(H-20) Q745 SWITCH
Q744(E-1) BUFFER
IC658 CXL1506M
Q752(G-14) BUFFER
(H-1) IC658 CCD 1H DELAY
Q748(J-1) BUFFER
Q747(I-21) INVERT AMP
PB Y
S.DET
TYTLEY
(D-5) Q735 SWITCH
(D-4) Q411 BUFFER
(D-16) Q736 SWITCH
(H-8) Q417 SWITCH
Q417 DTA144EU (M-3)(M-4) Q727,728 PEAKING FREQUENCY SWITCH
(D-2) IC659 Y INPUT SELECT/ TITLE Y MIX
(M-4)(M-4) Q730,731 PEAKING ON/OFF SWITCH
(K-5) Q648 SWITCH
IC659 NJM2235M
Y IN
Y/C SEP
Q727 DTA143EU
VG1
EMPHA Y LEVEL
(N-3) Q729 PEAKING AMP
(G-5) Q498 SWITCH
(N-3) Q732 PEAKING AMP
IC656 (N-2) REC/PB Y SWITCH
LC DELAY LINE (PAL:Y)
FL654
PB Y LEV
IC656 HA118070FP
CAM Y
(D-17) Q734 SWITCH
(E-5) Q733 SWITCH
(M-5) Q671 CUT-OFF FREQUENCY SWITCH
(L-5) Q703 BUFFER
(M-17) Q702 BUFFER
(G-7) D420 DAN202U D667 DA106U
Q753 FMA2
(I-4) Q753 L/E SWITCH
Q427 (I-4) A/D Y AMP
Q446 (I-4) A/D Y AMP
IC416 C SELECT (C-13)
CAM C
(C-9) Q663 CHROMA LIMITER
(B-13) D416
Q421(C-5) VIDEO BUFFER
Q760(J-4) L/E SWITCH
Q763(J-4) SWITCH
VREG
MPXE+LP
B-CLIP
W-CLIP
(J-4) Q761 L/E SWITCH
(J-4) Q762 SWITCH
PINP C
IC416 NJM2233
C LEVEL
C IN
IC661 NJM2234
PBC
IC660 NJM2235
Q764 (C-8) CHROMA AMP
Q765 (C-8) CHROMA OUT AMP
Q766(C-7) OUTPUT INHIBIT
IC661 (C-14) CHROMA INPUT SELECT/ TITLE C MIX
(C-9) Q426 DC BIAS
(C-16) Q774 ACK DETECT
(C-7) Q773 SWITCH
(D-15) Q775 SWITCH
CN650 4P
CAM Y
CAM GND
CAM C
FADER CONT
TO VC-86 BOARD CN307 (See page 122.)

D (1)


19
20
21
22
23
(L-1) Q721 TRAP FREQUENCY SWITCH
(K-3) Q722 EQ
(M-3) Q725 EQ
(M-2) Q724 EQ CHARACTER SWITCH
(L-20) Q723
Q428 DTC114TU
LPF (Y) FL658
Q752(G-14) BUFFER
IC658 (H-1) CCD 1H DELAY
Q748(J-1) BUFFER
Q747(J-21) INVERT AMP
LPF (CCD PAL Y) CHIP FL656
IC656 (N-2) REC/PB Y SWITCH
PB Y LEV
IC656 HA11807OFP
Q763 (J-4) SWITCH
W-CLIP
Q762 SWITCH
IC660 (D-9) TITLE C MIX
IC660 NJM2234
PBC
Q775 DTC144EU
(D-15) Q775 SWITCH
B12 LP/SP
A1 INV IN
A2 V OUT
B2 V GND
B30 HD INS
A3 UN JOG DOP
A5 PEAKING OUT
A5 PB Y
A7 DEEMP IN
A8 E/C
A10 L/E
A11 Y RF OUT
A12 DEM IN
B10 VA SW P
A14 PB RF IN
A26 Vcc
A16 PB C RF
A17 C MUTE
A18 REC C RF
B2 C SEL
A20 EXT C IN
A22 C IN
B2 Y GND
A26 Y Vcc
A25 V Vcc
A26 C Vcc
A27 IRB
B2 C GND
B8 FSC BUF
A30 FSC
A31 C OUT
A32 FSC BUF 2
A33 DOP
A34 HD
A35 VA PB MODE
A36 JOG
A37 V MUTE
B11 Y/C SEL
A39 H CHG
A40 D CLIP
A42 VG 1
A43 W CLIP
A44 COMP IN
A45 NC TC IN
A46 EMPH IN
A47 V REG
A48 Y COMB OUT
A50 PB 5V
A51 DL IN 2
A52 DL OUT 2
A53 AGC TC 2
A54 DL OUT 1
B2 GND
A56 DL IN 1
A57 CS
B23 CK
A59 SI
A60 SYNC OUT
A61 DDS
A62 Y OUT
A69 ACK
A64 Y IN
A65 VD
A66 V IN 1
A67 PAO C SELL
A68 V IN 2
B11 SP/LP
A72 SYNC DET
A73 AGC SLOW
A74 SYNC DET
A63 MASK
A76 MP/ME
TO VA-64 BOARD (1/2) (VIDEO(2))
(See page 149.)

no mark : REC/PB mode (VTR)
( ) : REC mode
( ) : PB mode
✳ : Impossible to measure the voltage at the marked points.

- Signal path

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

VIDEO (1) VIDEO (1)

< DIODE >

D415	8-719-421-30	MA141A
D416	8-719-800-76	1SS226
D417	8-719-941-86	DAN202U
D419	8-719-941-09	DAP202U
D420	8-719-941-86	DAN202U
D422	8-719-941-86	DAN202U
D423	8-719-941-86	DAN202U
D427	8-719-941-86	DAN202U
D428	8-719-941-86	DAN202U
D432	8-719-941-86	DAN202U
D433	8-719-941-86	DAN202U
D434	8-719-941-09	DAP202U
D435	8-719-941-86	DAN202U
D436	8-719-941-86	DAN202U
D437	8-719-941-86	DAN202U
D651	8-719-941-86	DAN202U
D652	8-719-977-22	DTZ9. 1
D653	8-719-941-86	DAN202U
D654	8-719-977-22	DTZ9. 1
D655	8-719-800-76	1SS226
D656	8-719-941-86	DAN202U
D657	8-719-800-76	1SS226
D661	8-719-941-86	DAN202U
D662	8-719-951-22	IMN10
D663	8-719-941-86	DAN202U
D667	8-719-941-89	DA106U
D669	8-719-977-22	DTZ9. 1
D670	8-719-977-22	DTZ9. 1
D671	8-719-977-22	DTZ9. 1
D672	8-719-977-22	DTZ9. 1
D673	8-719-800-76	1SS226
D674	8-719-977-22	DTZ9. 1
D675	8-719-977-22	DTZ9. 1
D676	8-719-977-22	DTZ9. 1
D677	8-719-977-22	DTZ9. 1
D678	8-719-977-22	DTZ9. 1
D679	8-719-977-22	DTZ9. 1
D680	8-719-977-22	DTZ9. 1
D681	8-719-977-22	DTZ9. 1
D690	8-719-941-86	DAN202U

< iC >

IC416	8-759-710-09	NJM2233AM
IC650	8-752-036-19	CXA1207AR
IC651	8-752-036-20	CXA1208R
IC652	8-759-605-61	CXA1203N
IC653	8-759-925-60	BA401
IC654	8-752-009-51	CX20095A
IC656	8-759-320-76	HA118070FP
IC657	8-752-333-24	CXL1506M
IC658	8-752-333-24	CXL1506M
IC659	8-759-710-29	NJM2235M
IC660	8-759-710-07	NJM2234M
IC661	8-759-710-07	NJM2234M
IC662	8-759-009-22	MC14094BF
IC663	8-759-710-29	NJM2235M

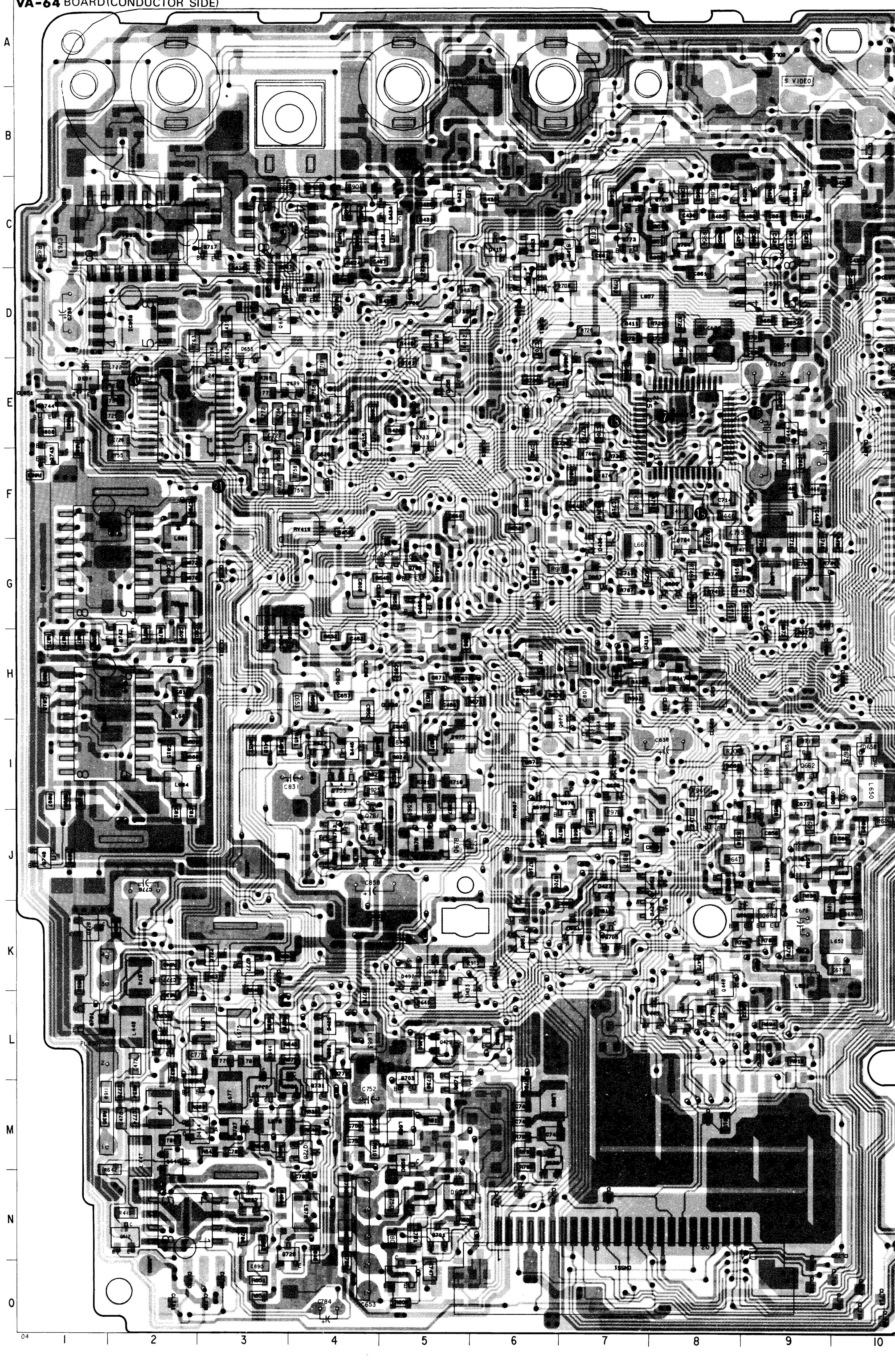
< TRANSISTOR >

Q411	8-729-905-23	2SA1576-R
Q412	8-729-905-18	DTC144EU
Q415	8-729-905-23	2SA1576-R
Q416	8-729-905-35	2SC4081-R
Q417	8-729-905-12	DTA144EU
Q418	8-729-905-35	2SC4081-R
Q421	8-729-905-23	2SA1576-R
Q422	8-729-905-18	DTC144EU
Q423	8-729-905-35	2SC4081-R
Q426	8-729-905-35	2SC4081-R
Q427	8-729-905-35	2SC4081-R
Q428	8-729-905-XX	DTC114TU
Q429	8-729-905-35	2SC4081-R
Q430	8-729-905-18	DTC144EU
Q431	8-729-905-23	2SA1576-R
Q432	8-729-905-23	2SA1576-R
Q433	8-729-905-35	2SC4081-R
Q434	8-729-905-23	2SA1576-R
Q439	8-729-905-12	DTA144EU
Q440	8-729-905-35	2SC4081-R
Q442	8-729-905-18	DTC144EU
Q443	8-729-905-18	DTC144EU
Q444	8-729-905-35	2SC4081-R
Q446	8-729-905-35	2SC4081-R
Q447	8-729-921-58	DTA144TU
Q448	8-729-905-18	DTC144EU
Q452	8-729-905-18	DTC144EU
Q456	8-729-905-18	DTC144EU
Q491	8-729-905-96	DTA114TU
Q493	8-729-905-12	DTA144EU
Q494	8-729-905-35	2SC4081-R
Q497	8-729-905-18	DTC144EU
Q498	8-729-905-18	DTC144EU
Q643	8-729-905-23	2SA1576-R
Q645	8-729-905-18	DTC144EU
Q647	8-729-905-18	DTC144EU
Q648	8-729-905-12	DTA144EU
Q649	8-729-905-18	DTC144EU
Q651	8-729-905-23	2SA1576-R
Q655	8-729-905-12	DTA144EU
Q656	8-729-905-23	2SA1576-R
Q657	8-729-905-35	2SC4081-R
Q658	8-729-924-36	DTC143EU
Q659	8-729-905-35	2SC4081-R
Q660	8-729-905-35	2SC4081-R
Q661	8-729-905-35	2SC4081-R
Q662	8-729-905-35	2SC4081-R
Q663	8-729-905-23	2SA1576-R
Q664	8-729-905-18	DTC144EU
Q665	8-729-905-35	2SC4081-R
Q666	8-729-905-35	2SC4081-R
Q667	8-729-905-18	DTC144EU
Q668	8-729-905-18	DTC144EU
Q669	8-729-905-18	DTC144EU
Q670	8-729-202-38	2SC3326N
Q671	8-729-905-18	DTC144EU
Q672	8-729-905-18	DTC144EU
Q673	8-729-905-12	DTA144EU
Q674	8-729-141-48	2SB624-BV345
Q675	8-729-905-18	DTC144EU
Q676		
Q677		
Q678		
Q679		
Q680		
Q681		
Q682		
Q683		
Q684		
Q685		
Q686		
Q687		
Q688		
Q689		
Q690		

VA-64 (VIDEO PROCESS) PRINTED WIRING BOARD

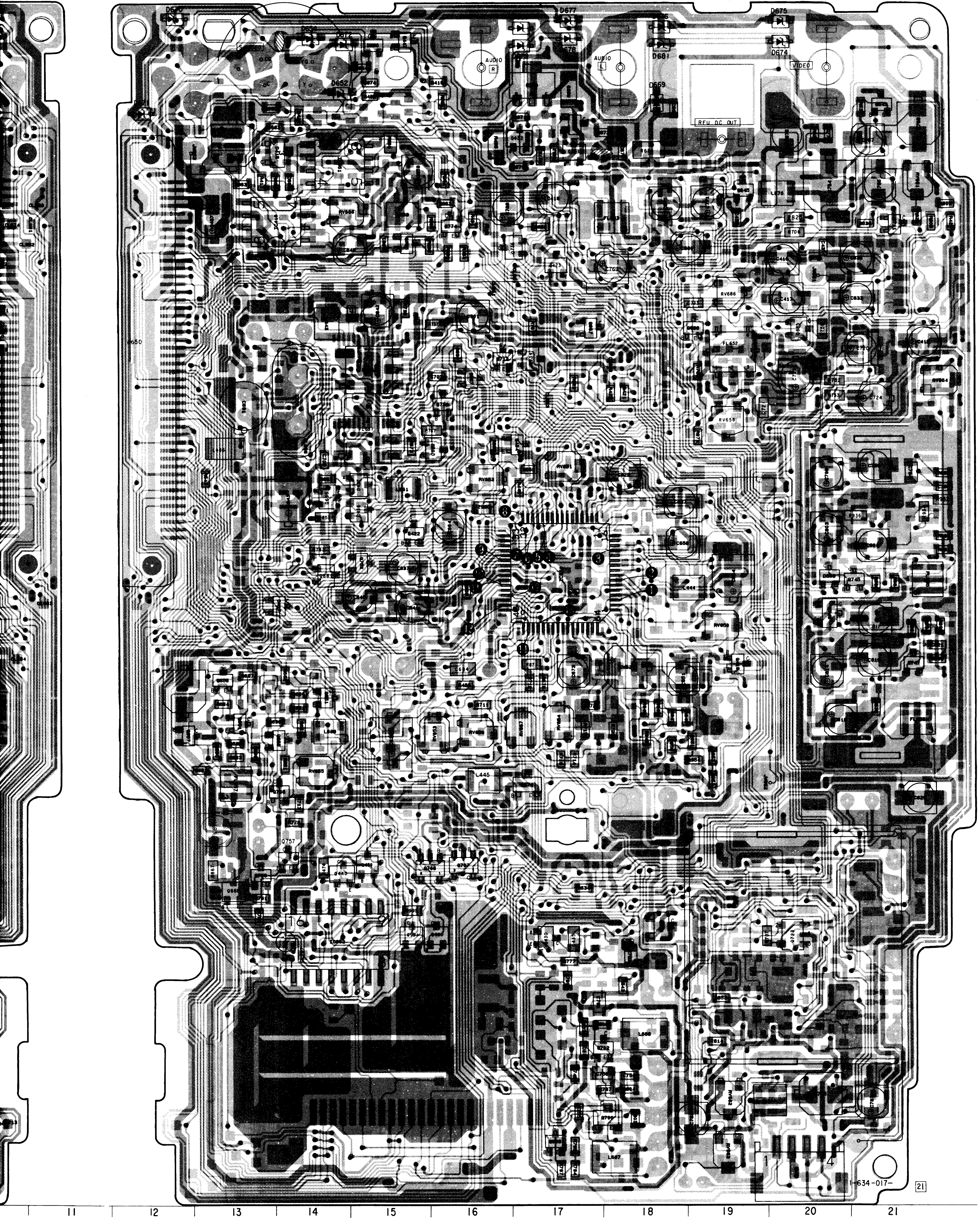
—Ref. No. VA-64 BOARD : 3000 series—

VA-64 BOARD(CONDUCTOR SIDE)



	8-729-905-12	DTA144EU
	8-729-905-12	DTA144EU
	8-729-202-38	2SC3326N
	8-729-202-38	2SC3326N
	8-729-905-35	2SC4081-R
	8-729-905-35	2SC4081-R
	8-729-905-35	2SC4081-R
	8-729-905-23	2SA1576-R
	8-729-905-18	DTC144EU
	8-729-905-12	DTA144EU
	8-729-905-35	2SC4081-R
	8-729-905-35	2SC4081-R
	8-729-905-35	2SC4081-R
	8-729-905-35	2SC4081-R
	8-729-141-48	2SB624-BV345
Q691	8-729-905-18	DTC144EU
Q692	8-729-905-18	DTC144EU
Q693	8-729-202-38	2SC3326N
Q694	8-729-202-38	2SC3326N
Q696	8-729-905-18	DTC144EU
Q698	8-729-905-35	2SC4081-R
Q699	8-729-905-12	DTA144EU
Q700	8-729-202-38	2SC3326N
Q701	8-729-905-35	2SC4081-R
Q702	8-729-905-35	2SC4081-R
Q703	8-729-905-23	2SA1576-R
Q705	8-729-905-12	DTA144EU
Q707	8-729-904-20	FMA2
Q708	8-729-904-07	FMG2
Q711	8-729-905-12	DTA144EU
Q712	8-729-905-12	DTA144EU
Q717	8-729-905-23	2SA1576-R
Q719	8-729-905-18	DTC144EU
Q721	8-729-202-38	2SC3326N
Q722	8-729-905-35	2SC4081-R
Q723	8-729-904-07	FMG2
Q724	8-729-905-23	2SA1576-R
Q725	8-729-905-23	2SA1576-R
Q727	8-729-905-45	DTA143EU
Q728	8-729-905-23	2SA1576-R
Q729	8-729-905-35	2SC4081-R
Q730	8-729-905-23	2SA1576-R
Q731	8-729-905-12	DTA144EU
Q732	8-729-905-35	2SC4081-R
Q733	8-729-905-18	DTC144EU
Q734	8-729-905-18	DTC144EU
Q735	8-729-905-35	2SC4081-R
Q736	8-729-905-45	DTA143EU
Q742	8-729-905-23	2SA1576-R
Q743	8-729-905-35	2SC4081-R
Q744	8-729-905-35	2SC4081-R
Q745	8-729-905-18	DTC144EU
Q746	8-729-141-48	2SB624-BV345
Q747	8-729-905-23	2SA1576-R
Q748	8-729-905-35	2SC4081-R
Q751	8-729-905-35	2SC4081-R
Q752	8-729-905-23	2SA1576-R
Q753	8-729-904-20	FMA2
Q756	8-729-905-23	2SA1576-R
Q757	8-729-905-35	2SC4081-R
Q758	8-729-905-35	2SC4081-R
Q760	8-729-905-12	DTA144EU
Q761	8-729-905-18	DTC144EU
Q762	8-729-905-18	DTC144EU
Q763	8-729-905-18	DTC144EU
Q764	8-729-905-35	2SC4081-R
Q765	8-729-905-35	2SC4081-R
Q766	8-729-905-23	2SA1576-R
Q770	8-729-101-07	2SB798-DL
Q772	8-729-905-12	DTA144EU
Q773	8-729-905-12	DTA144EU
Q774	8-729-905-35	2SC4081-R
Q775	8-729-905-18	DTC144EU
Q776	8-729-921-58	DTA144TU
Q777	8-729-905-23	2SA1576-R
Q784	8-729-905-35	2SC4081-R
Q786	8-729-905-18	DTC144EU
Q990	8-729-905-18	DTC144EU
Q991	8-729-905-18	DTC144EU

VA-64 BOARD (COMPONENT SIDE)

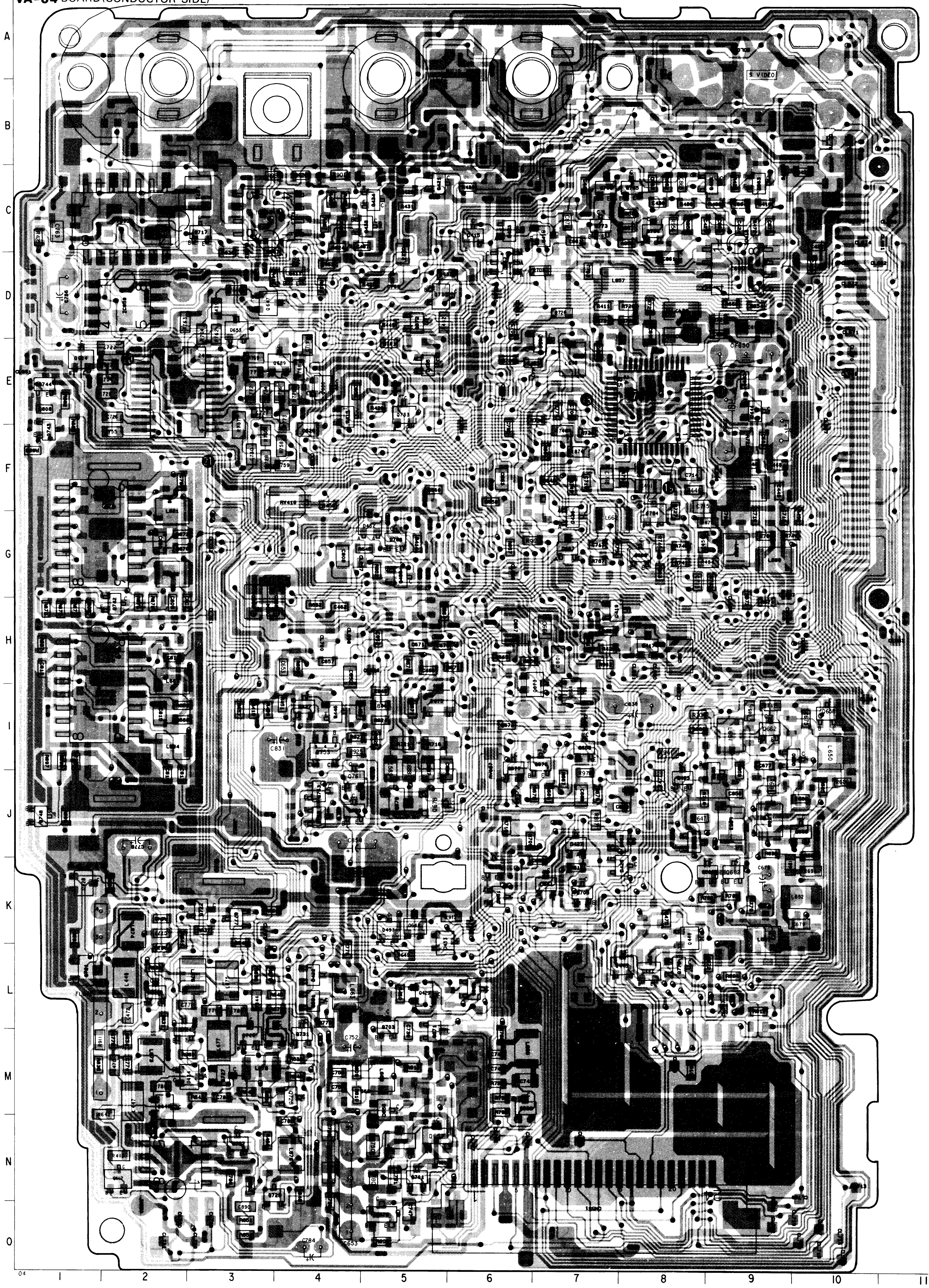


< DIODE >		
D415	8-719-421-30	MA141A
D416	8-719-800-76	1SS226
D417	8-719-941-86	DAN202U
D419	8-719-941-09	DAP202U
D420	8-719-941-86	DAN202U
D422	8-719-941-86	DAN202U
D423	8-719-941-86	DAN202U
D427	8-719-941-86	DAN202U
D428	8-719-941-86	DAN202U
D432	8-719-941-86	DAN202U
D433	8-719-941-86	DAN202U
D434	8-719-941-09	DAP202U
D435	8-719-941-86	DAN202U
D436	8-719-941-86	DAN202U
D437	8-719-941-86	DAN202U
D651	8-719-941-86	DAN202U
D652	8-719-977-22	DTZ9. 1
D653	8-719-941-86	DAN202U
D654	8-719-977-22	DTZ9. 1
D655	8-719-800-76	1SS226
D656	8-719-941-86	DAN202U
D657	8-719-800-76	1SS226
D661	8-719-941-86	DAN202U
D662	8-719-951-22	IMN10
D663	8-719-941-86	DAN202U
D667	8-719-941-89	DA106U
D669	8-719-977-22	DTZ9. 1
D670	8-719-977-22	DTZ9. 1
D671	8-719-977-22	DTZ9. 1
D672	8-719-977-22	DTZ9. 1
D673	8-719-800-76	1SS226
D674	8-719-977-22	DTZ9. 1
D675	8-719-977-22	DTZ9. 1
D676	8-719-977-22	DTZ9. 1
D677	8-719-977-22	DTZ9. 1
D678	8-719-977-22	DTZ9. 1
D679	8-719-977-22	DTZ9. 1
D680	8-719-977-22	DTZ9. 1
D681	8-719-977-22	DTZ9. 1
D690	8-719-941-86	DAN202U
< IC >		
IC416	8-759-710-09	NJM2233AM
IC650	8-752-036-19	CXA1207AR
IC651	8-752-036-20	CXA1208R
IC652	8-759-605-61	CXA1203N
IC653	8-759-925-60	BA401
IC654	8-752-009-51	CX20095A
IC656	8-759-320-76	HA118070FP
IC657	8-752-333-24	CXL1506M
IC658	8-752-333-24	CXL1506M
IC659	8-759-710-29	NJM2235M
IC660	8-759-710-07	NJM2234M
IC661	8-759-710-07	NJM2234M
IC662	8-759-009-22	MC14094BF
IC663	8-759-710-29	NJM2235M
< TRANSISTOR >		
Q411	8-729-905-23	2SA1576-R
Q412	8-729-905-18	DTC144EU
Q415	8-729-905-23	2SA1576-R
Q416	8-729-905-35	2SC4081-R
Q417	8-729-905-12	DTA144EU
Q418	8-729-905-35	2SC4081-R
Q421	8-729-905-23	2SA1576-R
Q422	8-729-905-18	DTC144EU
Q423	8-729-905-35	2SC4081-R
Q426	8-729-905-35	2SC4081-R
Q427	8-729-905-35	2
Q428	8-729-905-XX	D
Q429	8-729-905-35	2
Q430	8-729-905-18	D
Q431	8-729-905-23	2
Q432	8-729-905-23	2
Q433	8-729-905-35	2
Q434	8-729-905-23	2
Q439	8-729-905-12	D
Q440	8-729-905-35	2
Q442	8-729-905-18	D
Q443	8-729-905-18	D
Q444	8-729-905-35	2
Q446	8-729-905-35	2
Q447	8-729-921-58	D

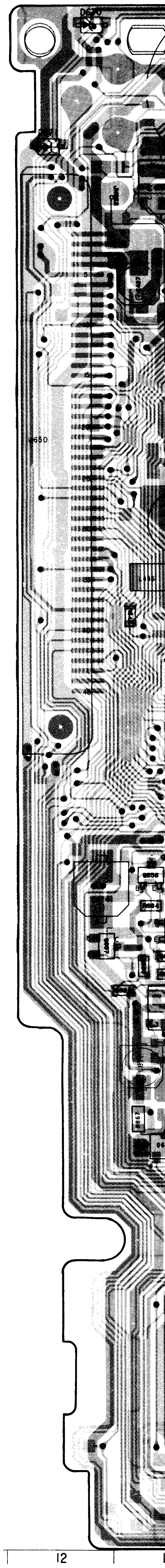
VA-64 (VIDEO PROCESS) PRINTED WIRING BOARD

—Ref. No. VA-64 BOARD : 3000 series—

VA-64 BOARD(CONDUCTOR SIDE)



VA-64 BOARD (COMP



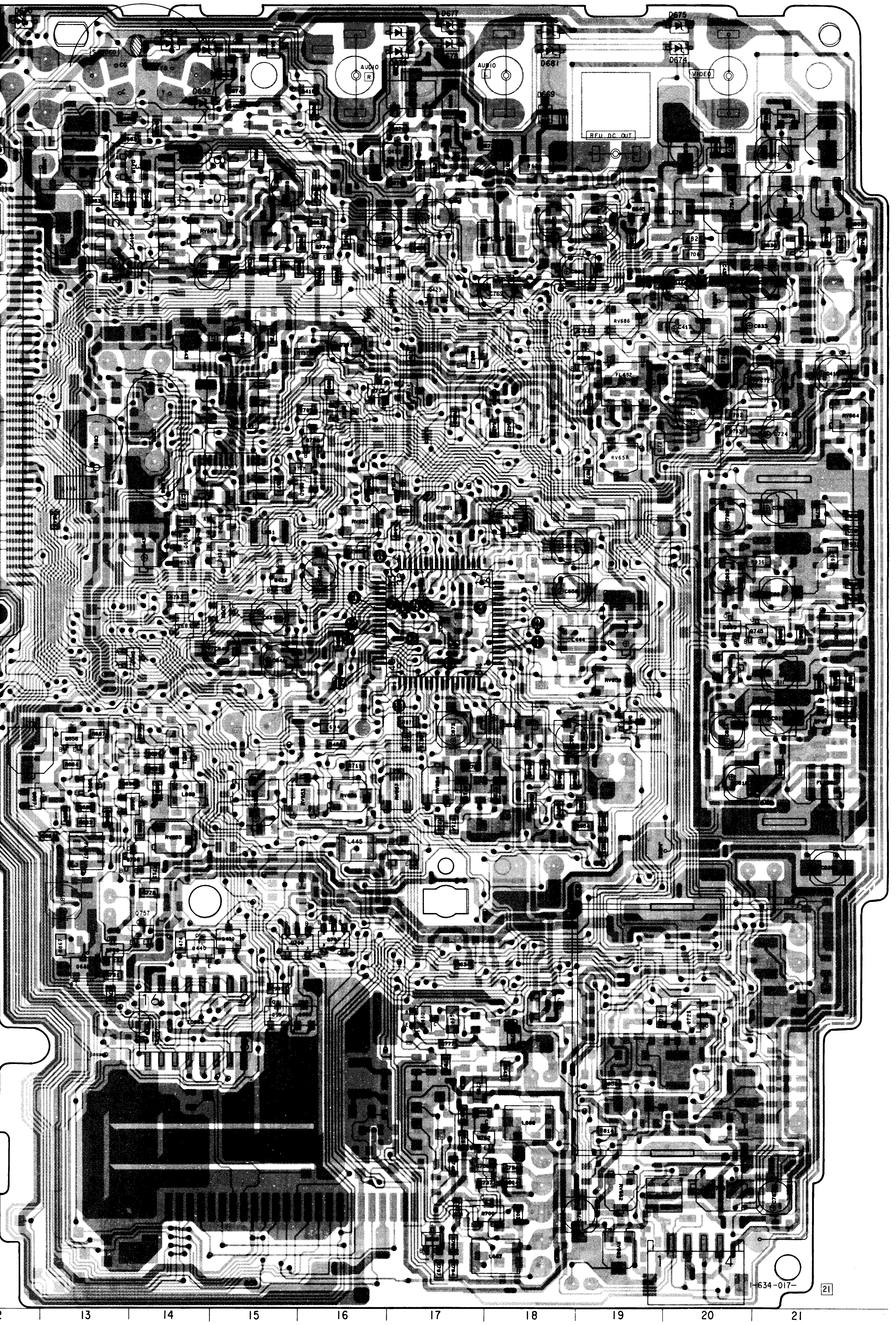
8-729-905-35	2SC4081-R
8-729-905-XX	DTC114TU
8-729-905-35	2SC4081-R
8-729-905-18	DTC144EU
8-729-905-23	2SA1576-R
8-729-905-23	2SA1576-R
8-729-905-35	2SC4081-R
8-729-905-23	2SA1576-R
8-729-905-12	DTA144EU
8-729-905-35	2SC4081-R
8-729-905-18	DTC144EU
8-729-905-18	DTC144EU
8-729-905-35	2SC4081-R
8-729-905-35	2SC4081-R
8-729-921-58	DTA144TU

Q448	8-729-905-18	DTC144EU
Q452	8-729-905-18	DTC144EU
Q456	8-729-905-18	DTC144EU
Q491	8-729-905-96	DTA114TU
Q493	8-729-905-12	DTA144EU
Q494	8-729-905-35	2SC4081-R
Q497	8-729-905-18	DTC144EU
Q498	8-729-905-18	DTC144EU
Q643	8-729-905-23	2SA1576-R
Q645	8-729-905-18	DTC144EU
Q647	8-729-905-18	DTC144EU
Q648	8-729-905-12	DTA144EU
Q649	8-729-905-18	DTC144EU
Q651	8-729-905-23	2SA1576-R
Q655	8-729-905-12	DTA144EU

Q656	8-729-905-23	2SA1576-R
Q657	8-729-905-35	2SC4081-R
Q658	8-729-924-36	DTC143EU
Q659	8-729-905-35	2SC4081-R
Q660	8-729-905-35	2SC4081-R
Q661	8-729-905-35	2SC4081-R
Q662	8-729-905-35	2SC4081-R
Q663	8-729-905-23	2SA1576-R
Q664	8-729-905-18	DTC144EU
Q665	8-729-905-35	2SC4081-R
Q666	8-729-905-35	2SC4081-R
Q667	8-729-905-18	DTC144EU
Q668	8-729-905-18	DTC144EU
Q669	8-729-905-18	DTC144EU
Q670	8-729-202-38	2SC3326N

Q671	8-729-905-18	DTC144EU
Q672	8-729-905-18	DTC144EU
Q673	8-729-905-12	DTA144EU
Q674	8-729-141-48	2SB624-BV345
Q675	8-729-905-18	DTC144EU
Q676	8-729-905-12	DTA144EU
Q677	8-729-905-12	DTA144EU
Q678	8-729-202-38	2SC3326N
Q679	8-729-202-38	2SC3326N
Q680	8-729-905-35	2SC4081-R
Q681	8-729-905-35	2SC4081-R
Q682	8-729-905-35	2SC4081-R
Q683	8-729-905-23	2SA1576-R
Q684	8-729-905-18	DTC144EU
Q685	8-729-905-12	DTA144EU

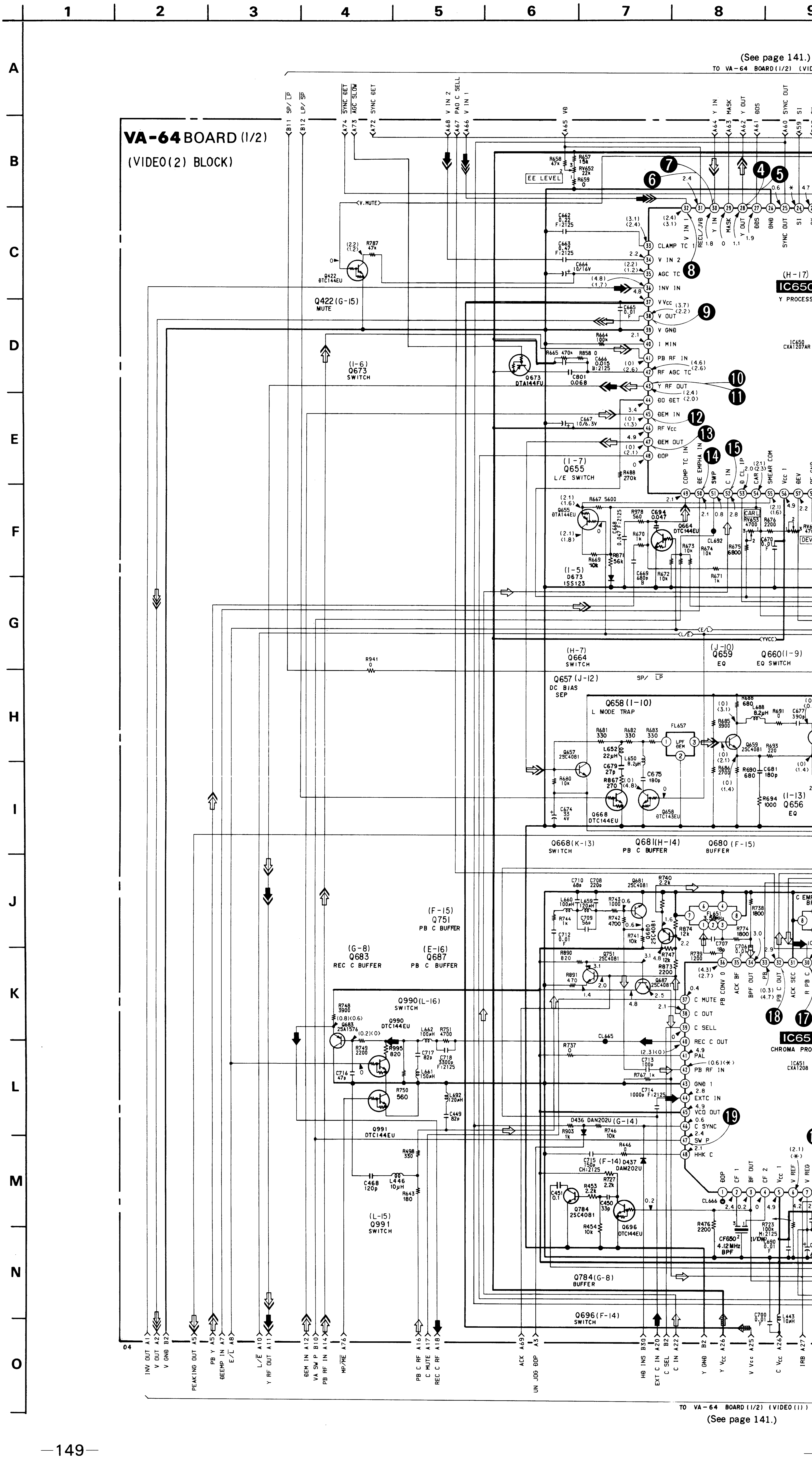
BOARD (COMPONENT SIDE)



Q686	8-729-905-35	2SC4081-R
Q687	8-729-905-35	2SC4081-R
Q688	8-729-905-35	2SC4081-R
Q689	8-729-905-35	2SC4081-R
Q690	8-729-141-48	2SB624-BV345
Q691	8-729-905-18	DTC144EU
Q692	8-729-905-18	DTC144EU
Q693	8-729-202-38	2SC3326N
Q694	8-729-202-38	2SC3326N
Q696	8-729-905-18	DTC144EU
Q698	8-729-905-35	2SC4081-R
Q699	8-729-905-12	DTA144EU
Q700	8-729-202-38	2SC3326N
Q701	8-729-905-35	2SC4081-R
Q702	8-729-905-35	2SC4081-R
Q703	8-729-905-23	2SA1576-R
Q705	8-729-905-12	DTA144EU
Q707	8-729-904-20	FMA2
Q708	8-729-904-07	FMG2
Q711	8-729-905-12	DTA144EU
Q712	8-729-905-12	DTA144EU
Q717	8-729-905-23	2SA1576-R
Q719	8-729-905-18	DTC144EU
Q721	8-729-202-38	2SC3326N
Q722	8-729-905-35	2SC4081-R
Q723	8-729-904-07	FMG2
Q724	8-729-905-23	2SA1576-R
Q725	8-729-905-23	2SA1576-R
Q727	8-729-905-45	DTA143EU
Q728	8-729-905-23	2SA1576-R
Q729	8-729-905-35	2SC4081-R
Q730	8-729-905-23	2SA1576-R
Q731	8-729-905-12	DTA144EU
Q732	8-729-905-35	2SC4081-R
Q733	8-729-905-18	DTC144EU
Q734	8-729-905-18	DTC144EU
Q735	8-729-905-35	2SC4081-R
Q736	8-729-905-45	DTA143EU
Q742	8-729-905-23	2SA1576-R
Q743	8-729-905-35	2SC4081-R
Q744	8-729-905-35	2SC4081-R
Q745	8-729-905-18	DTC144EU
Q746	8-729-141-48	2SB624-BV345
Q747	8-729-905-23	2SA1576-R
Q748	8-729-905-35	2SC4081-R
Q751	8-729-905-35	2SC4081-R
Q752	8-729-905-23	2SA1576-R
Q753	8-729-904-20	FMA2
Q756	8-729-905-23	2SA1576-R
Q757	8-729-905-35	2SC4081-R
Q758	8-729-905-35	2SC4081-R
Q760	8-729-905-12	DTA144EU
Q761	8-729-905-18	DTC144EU
Q762	8-729-905-18	DTC144EU
Q763	8-729-905-18	DTC144EU
Q764	8-729-905-35	2SC4081-R
Q765	8-729-905-35	2SC4081-R
Q766	8-729-905-23	2SA1576-R
Q770	8-729-101-07	2SB798-DL
Q772	8-729-905-12	DTA144EU
Q773	8-729-905-12	DTA144EU
Q774	8-729-905-35	2SC4081-R
Q775	8-729-905-18	DTC144EU
Q776	8-729-921-58	DTA144TU
Q777	8-729-905-23	2SA1576-R
Q784	8-729-905-35	2SC4081-R
Q786	8-729-905-18	DTC144EU
Q990	8-729-905-18	DTC144EU
Q991	8-729-905-18	DTC144EU

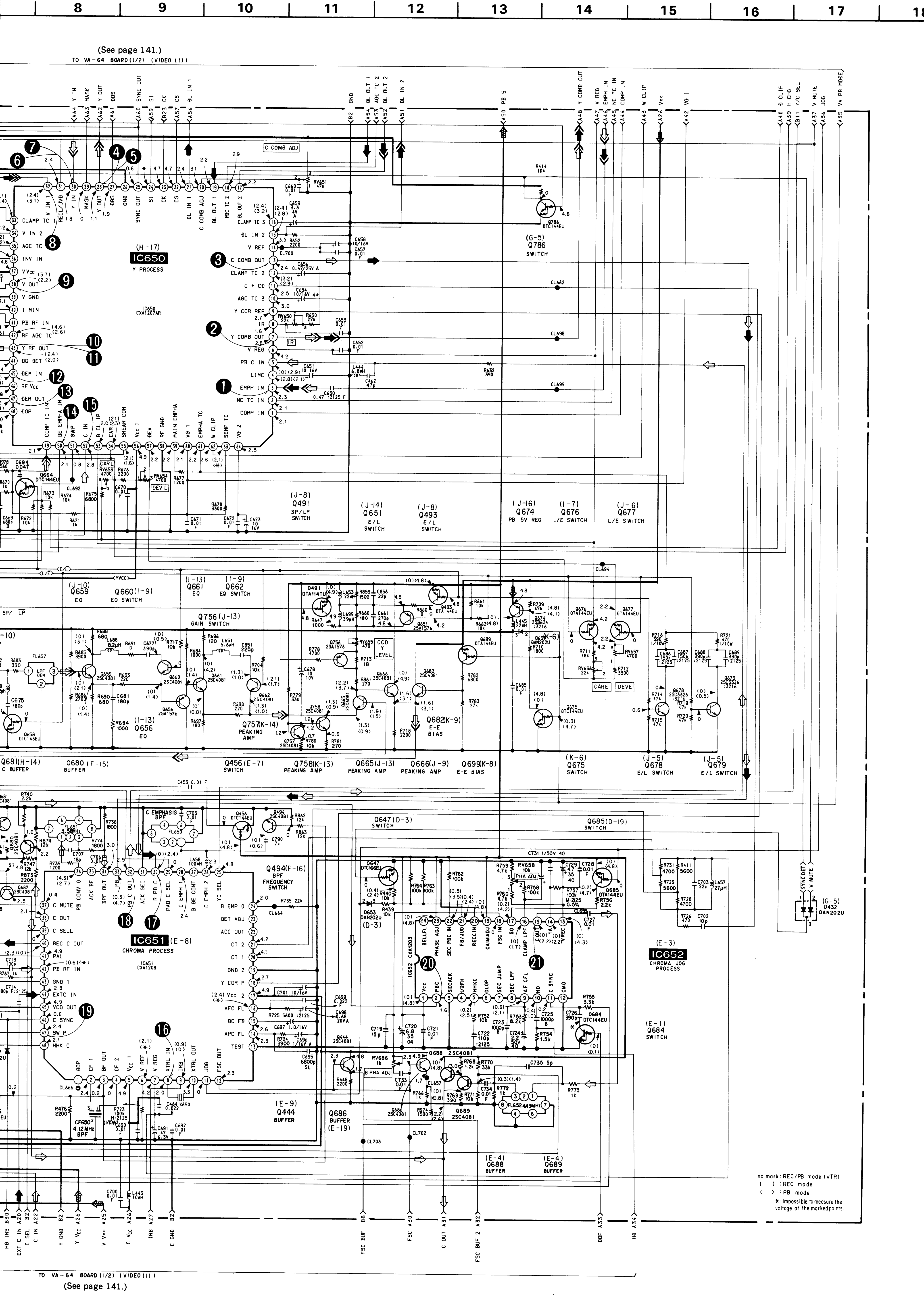
VA-64 (VIDEO PROCESS) SCHEMATIC DIAGRAM

—Ref. No. VA-64 BOARD : 3000 series—

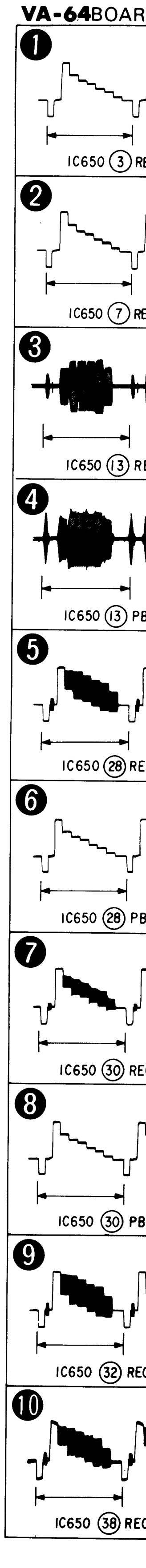

1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
(See page 141.)
TO VA-64 BOARD (1/2) (VIDEO (1))
VA-64 BOARD (1/2)
(VIDEO (2) BLOCK)
SP/LP
LP/SP
SYNC DET
AGC SLOW
SYNC DET
V IN 2
PAD C SELL
V IN 1
V0
Y IN
MASK
Y OUT
BDS
SYNC OUT
S1
EE LEVEL
V.MUTE
CLAMP TC
V IN 2
AGC TC
INV IN
VVcc
V OUT
V GND
I MIN
PB RF IN
RF AGC TC
Y RF OUT
DO DET
DEM IN
RF Vcc
DEM OUT
DOP
REC L/JVB
V IN 1
Y IN
MASK
Y OUT
GND
SYNC OUT
COMP TC IN
SWP
DE EMPHA IN
C IN
D CLIP
CAR
SHEAR COM
Vcc 1
DEV
(H-17)
IC650
Y PROCESS
IC650 CXA1207AR
Q422 (G-15) MUTE
Q422 DTC144EU
(I-6) Q673 SWITCH
Q673 DTA144FU
(I-7) Q655 L/E SWITCH
Q655 DTA144EU
Q664 DTC144EU
(I-5) D673 1SS123
(H-7) Q664 SWITCH
(J-10) Q659 EQ
Q660 (I-9) EQ SWITCH
Q657 (J-12) DC BIAS SEP
SP/LP
Q658 (I-10) L MODE TRAP
FL657 LPF DEM
Q657 2SC4081
Q659 2SC4081
Q668 DTC144EU
Q658 DTC143EU
(I-13) Q656 EQ
Q668 (K-13) SWITCH
Q681 (H-14) PB C BUFFER
Q680 (F-15) BUFFER
(F-15) Q751 PB C BUFFER
(G-8) Q683 REC C BUFFER
(E-16) Q687 PB C BUFFER
Q990 (L-16) SWITCH
Q990 DTC144EU
Q683 2SA1576
Q991 DTC144EU
(L-15) Q991 SWITCH
Q681 2SC4081
Q680 2SC4081
Q751 2SC4081
Q687 2SC4081
FL651
C EMP
PB CONV O
BPF OUT
PB C OUT
ACK SEC
C MUTE
C OUT
C SELL
REC C OUT
PAL
PB RF IN
GND 1
EXTC IN
VCO OUT
C SYNC
SW P
HHK C
IC651
CHROMA PRO
IC651 CXA1208
D436 DAN202U (G-14)
C715 (F-14) D437 DAM202U
Q784 2SC4081
Q696 DTC144EU
DOP
CF 1
BF OUT
CF 2
Vcc 1
V REF
V REG
CF650 4.12MHz BPF
Q784 (G-8) BUFFER
Q696 (F-14) SWITCH
R941 0
6
7
4
5
8
9
10
11
12
13
14
15
16
17
18
19
04
INV OUT A1
V OUT A2
V GND B2
PEAKING OUT A5
PB Y A5
DEEMP IN A7
E/L A8
L/E A10
Y RF OUT A11
DEM IN A12
VA SW P B10
PB RF IN A14
MP/ME A76
PB C RF A16
C MUTE A17
REC C RF A18
ACK A69
UN JOG DOP A3
HD INS B30
EXT C IN A20
C SEL B2
C IN A22
Y GND B2
Y Vcc A26
V Vcc A25
C Vcc A26
IRB A27
TO VA-64 BOARD (1/2) (VIDEO (1))
(See page 141.)

• Signal path

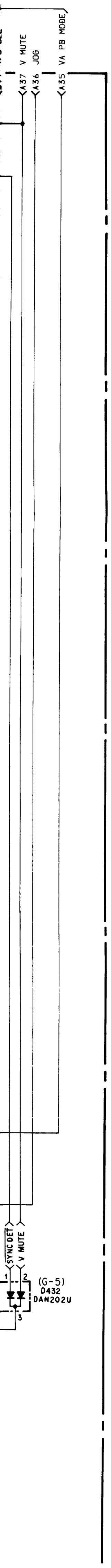
REC			
PB			



8
9
10
11
12
13
14
15
16
17
(See page 141.)
TO VA-64 BOARD (1/2) (VIDEO (I))
C COMB ADJ
(H-17)
IC650
Y PROCESS
IC650 CXA1207AR
(G-5) Q786 SWITCH
(J-8) Q491 SP/LP SWITCH
(J-14) Q651 E/L SWITCH
(J-8) Q493 E/L SWITCH
(J-16) Q674 PB 5V REG
(I-7) Q676 L/E SWITCH
(J-6) Q677 L/E SWITCH
(J-10) Q659 EQ
Q660 (I-9) EQ SWITCH
(I-13) Q661 EQ
(I-9) Q662 EQ SWITCH
Q756 (J-13) GAIN SWITCH
(I-13) Q656 EQ
Q757 (K-14) PEAKING AMP
Q682 (K-9) E-E BIAS
CCD Y LEVEL
CARE
DEVE
Q681 (H-14) C BUFFER
Q680 (F-15) BUFFER
Q456 (E-7) SWITCH
Q758 (K-13) PEAKING AMP
Q665 (J-13) PEAKING AMP
Q666 (J-9) PEAKING AMP
Q699 (K-8) E-E BIAS
(K-6) Q675 SWITCH
(J-5) Q678 E/L SWITCH
(J-5) Q679 E/L SWITCH
C EMPHASIS BPF
Q647 (D-3) SWITCH
Q685 (D-19) SWITCH
Q494 (F-16) BPF FREQUENCY SWITCH
IC651 (E-8)
CHROMA PROCESS
IC651 CXA1208
PHA ADJ
(E-3)
IC652
CHROMA JOG PROCESS
(E-1) Q684 SWITCH
(G-5) D432 DAN202U
(E-9) Q444 BUFFER
Q686 BUFFER (E-19)
(E-4) Q688 BUFFER
(E-4) Q689 BUFFER
CF650 4.12MHz BPF
no mark: REC/PB mode (VTR)
( ) : REC mode
< > : PB mode
*: Impossible to measure the voltage at the marked points.
TO VA-64 BOARD (1/2) (VIDEO (I))
(See page 141.)

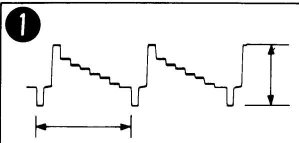


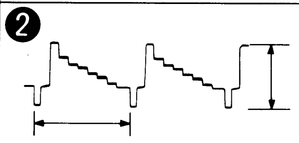
VA-64BOAR
❶
IC650 ③ RE
❷
IC650 ⑦ RE
❸
IC650 ⑬ RE
❹
IC650 ⑬ PB
❺
IC650 ㉘ RE
❻
IC650 ㉘ PB
❼
IC650 ㉚ RE
❽
IC650 ㉚ PB
❾
IC650 ㉜ REC
❿
IC650 ㊳ REC

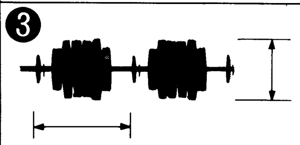

A37 V MUTE
A36 JOG
A35 VA PB MODE
SYNC DET
V MUTE
1
2
3
(G-5)
D432
DAN202U

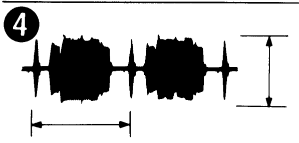
/PB mode (VTR)
mode
mode
ssible to measure the
at the marked points.

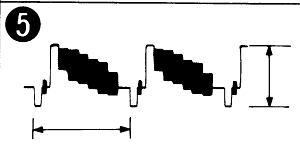
VA-64 BOARD

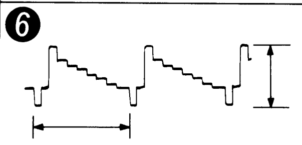

❶ IC650 ③ REC/PB 0.46Vp-p(H)

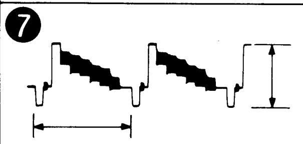

❷ IC650 ⑦ REC/PB 0.42Vp-p(H)

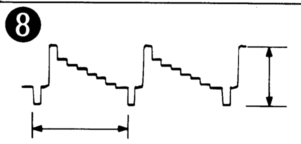

❸ IC650 ⑬ REC 0.18Vp-p(H)

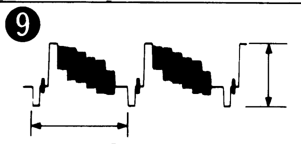

❹ IC650 ⑬ PB 0.24Vp-p(H)

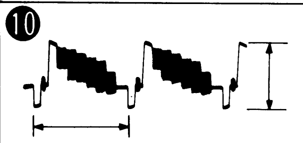

❺ IC650 ㉘ REC 0.48Vp-p(H)

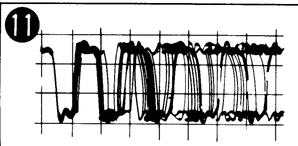

❻ IC650 ㉘ PB 0.46Vp-p(H)

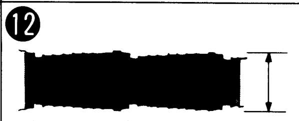

❼ IC650 ㉚ REC 0.42Vp-p(H)

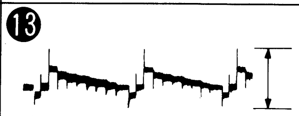

❽ IC650 ㉚ PB 0.42Vp-p(H)

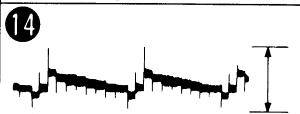

❾ IC650 ㉜ REC/PB 0.62 Vp-p(H)

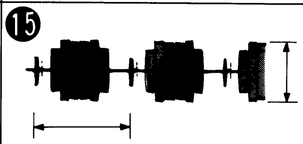

❿ IC650 ㊳ REC/PB 0.14 Vp-p(H)

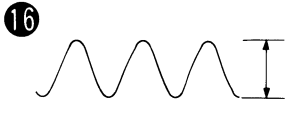

⓫ IC650 ㊸ REC 0.2V/div, 0.1μsec/div

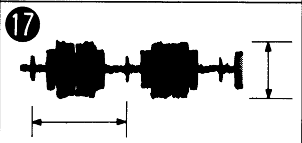

⓬ IC650 ㊺ PB 0.34Vp-p(H)

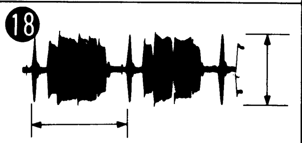

⓭ IC650 ㊼ PB 0.3Vp-p(H)

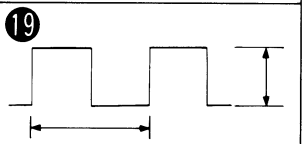

⓮ IC650 ㊿ PB 0.48Vp-p(H)

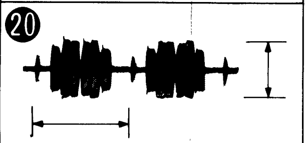

⓯ IC650 (52) REC/PB REC: 0.36Vp-p(H)
PB : 0.26Vp-p(H)

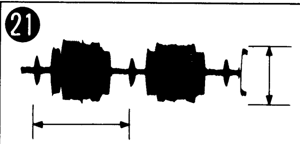

⓰ IC651 ⑧ REC/PB 0.14Vp-p(4.43MHz)


⓱ IC651 ㉚ REC 0.18Vp-p(H)


⓲ IC651 ㉜ PB 0.4Vp-p(H)

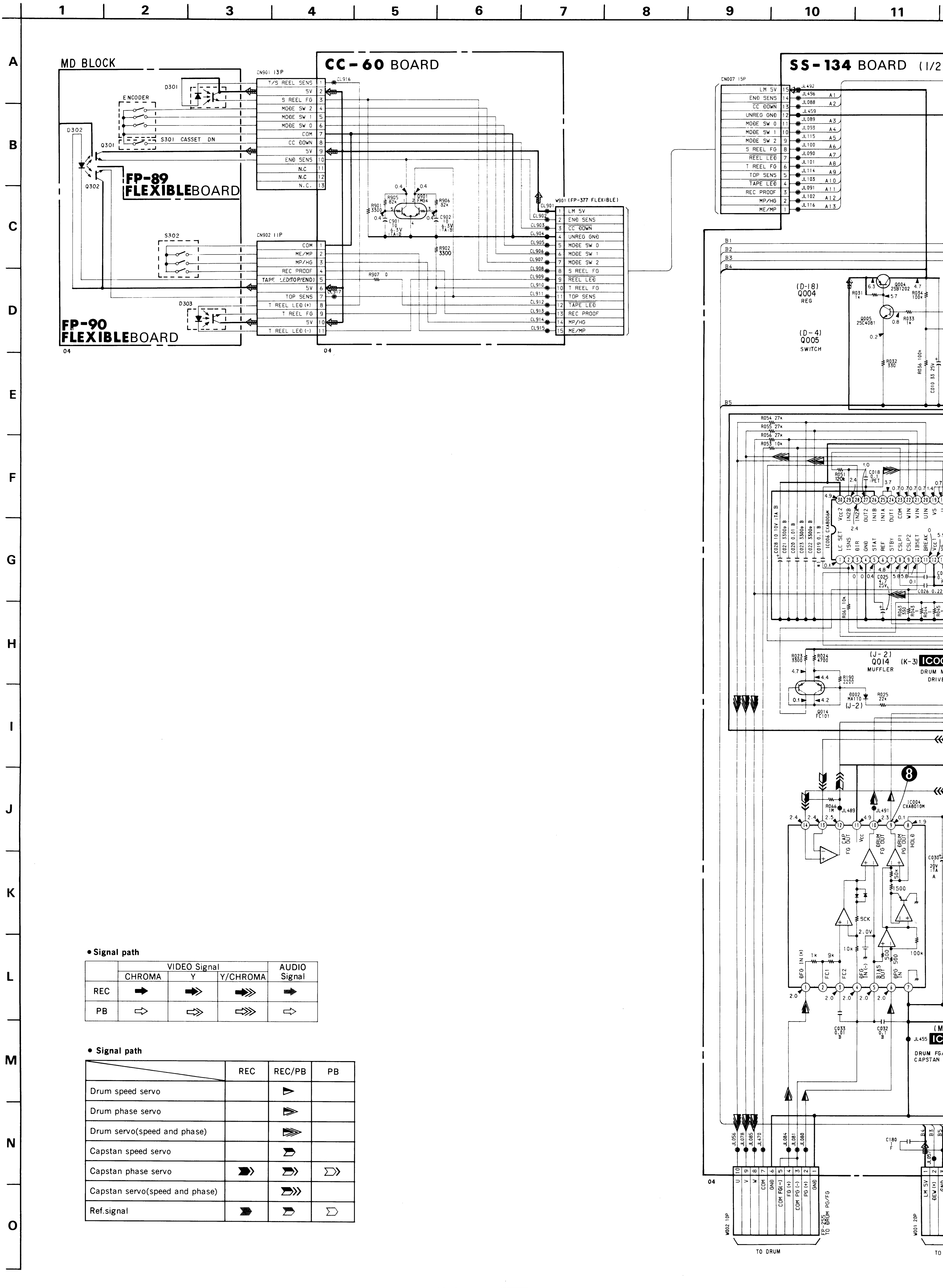

⓳ IC651 ㊼ REC/PB 5Vp-p(2V)


⓴ IC652 ② PB 0.3Vp-p(H)


㉑ IC652 ⑮ PB 0.3Vp-p(H)

SS-134 (R/P AMP, SERVO, SYSTEM CONTROL), CC-60 (RELAY), FP-89 (MODE SWITCH, SENSOR), FP-90 (TAPE SELECT SWITCH, SENSOR) SCHEMATIC DIAGRAM

—Ref. No. SS-134, CC-60 BOARDS : 2000 series, FP-89, FP-90 BOARDS : 5000 series—

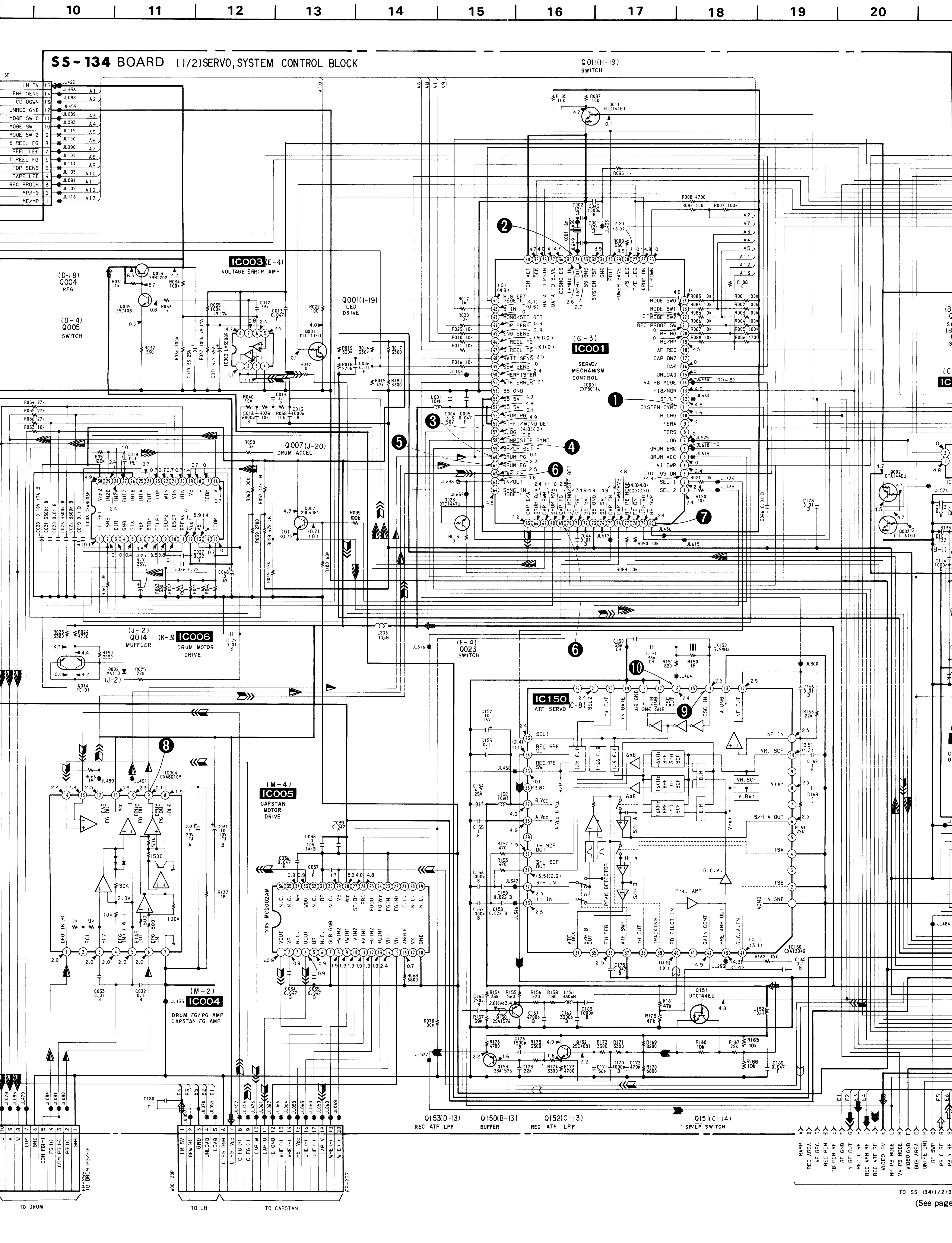

1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
MD BLOCK
ENCODER
D301
D302
Q301
Q302
S301 CASSET DN
FP-89 FLEXIBLE BOARD
S302
D303
FP-90 FLEXIBLE BOARD
CC-60 BOARD
CN901 13P
T/S REEL SENS
5V
S REEL FG
MODE SW 2
MODE SW 1
MODE SW 0
COM
CC DOWN
END SENS
N.C
CN902 11P
ME/MP
MP/HG
REC PROOF
TAPE LED(TOP/END)
TOP SENS
T REEL LED (+)
T REEL FG
T REEL LED (-)
Q901 FMG4
R901 3300
R905 82k
R906 82k
C901 10 6.3V
C902 10 6.3V
R902 3300
R907 0
W901 (FP-377 FLEXIBLE)
LM 5V
UNREG GND
REEL LED
T REEL FG
TAPE LED
SS-134 BOARD (1/2
CN007 15P
(D-18) Q004 REG
(D-4) Q005 SWITCH
Q004 2SB1202
Q005 2SC4081
R031 1k
R032 330
R033 1k
R034 100k
R036 100k
C010 33 25V
R054 27k
R055 27k
R056 27k
R053 10k
R051 120k
C018 0.1
IC006 CXA8006M
C020 10 10V
C021 3300p
C023 3300p
C019 0.1
C022 3300p
C025 4.7 25V
C026 0.22
R061 10k
R063 330
(J-2) Q014 MUFFLER
(K-3) IC00
DRUM M DRIVE
R023 3300
R024 4700
R190 2200
D002 MA110
R025 22k
Q014 FC101
IC004 CXA8010M
R066 1M
JL489
JL491
CAP FG OUT
Vcc
DRUM FG OUT
DRUM PG OUT
HOLD
BFG IN (+)
FC1
FC2
BFG IN(-)
BIAS OUT
RPG IN
C030 20V
C033 0.01
C032 0.1
JL455
DRUM FG/ CAPSTAN
C180
W002 10P
U
V
W
COM
GND
COM FG(-)
FG (+)
COM PG (-)
PG (+)
FP-255 TO DRUM PG/FG
TO DRUM
W001 20P
LM 5V
TO
8
04

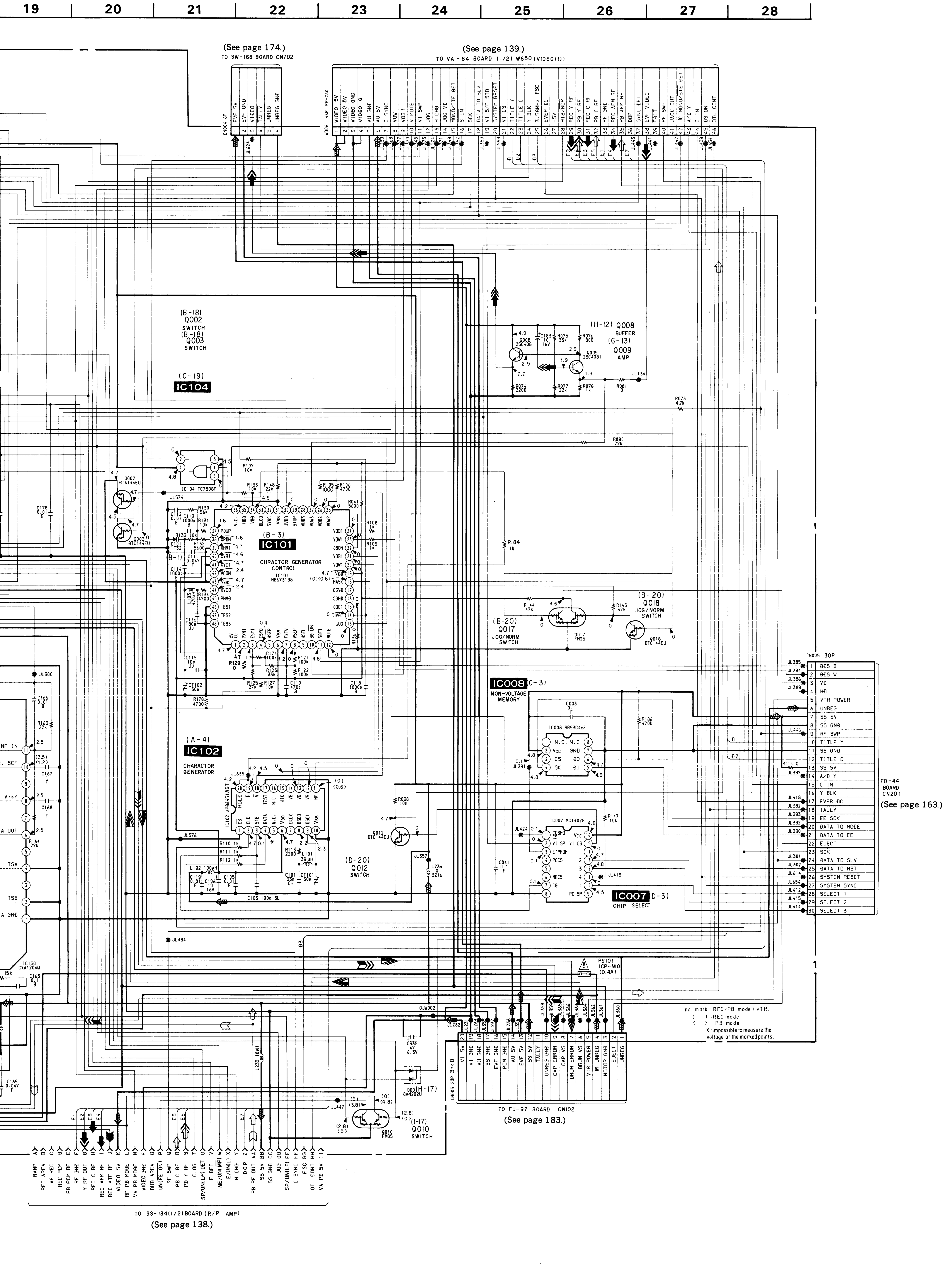
• **Signal path**

	VIDEO Signal			AUDIO Signal
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»»	➡
PB	⇨	⇨»	⇨»»	⇨

• **Signal path**

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷»	
Drum servo(speed and phase)		▷»»	
Capstan speed servo		⊃	
Capstan phase servo	⊃»	⊃»	⊃»
Capstan servo(speed and phase)		⊃»»	
Ref.signal	⊃	⊃	⊃


10
11
12
13
14
15
16
17
18
19
20
SS-134 BOARD (1/2)SERVO, SYSTEM CONTROL BLOCK
Q011(H-19) SWITCH
IC003 (E-4) VOLTAGE ERROR AMP
(D-18) Q004 REG
(D-4) Q005 SWITCH
Q001(I-19) LED DRIVE
(G-3) IC001 SERVO/ MECHANISM CONTROL
IC001 CXP80116
Q007(J-20) DRUM ACCEL
(J-2) Q014 MUFFLER
(K-3) IC006 DRUM MOTOR DRIVE
IC006 CXA8006M
(F-4) Q023 SWITCH
IC150 (C-8) ATF SERVO
IC150 CXA1204Q
(M-4) IC005 CAPSTAN MOTOR DRIVE
IC005 MCD002AM
(M-2) IC004 DRUM FG/PG AMP CAPSTAN FG AMP
IC004 CXA8010M
Q153(D-13) REC ATF LPF
Q150(B-13) BUFFER
Q152(C-13) REC ATF LPF
Q151(C-14) SP/LP SWITCH
LM 5V
END SENS
CC DOWN
UNREG GND
MODE SW 0
MODE SW 1
MODE SW 2
S REEL FG
REEL LED
T REEL FG
TOP SENS
TAPE LED
REC PROOF
MP/HG
ME/MP
TO DRUM
FP-255 TO DRUM PG/FG
TO LM
TO CAPSTAN
FP-257
TO SS-134(1/2)B
(See page
RAMP
REC AREA
AF REC
REC PCM
PB PCM RF
RF GND
Y RF OUT
REC C RF
REC AFM RF
REC ATF RF
VIDEO 5V
RP PB MODE
VA PB MODE
VIDEO GND
DUB AREA
UNIFE ON
RF SWP
PB C RF
PB Y RF
❶
❷
❸
❹
❺
❻
❼
❽
❾
❿



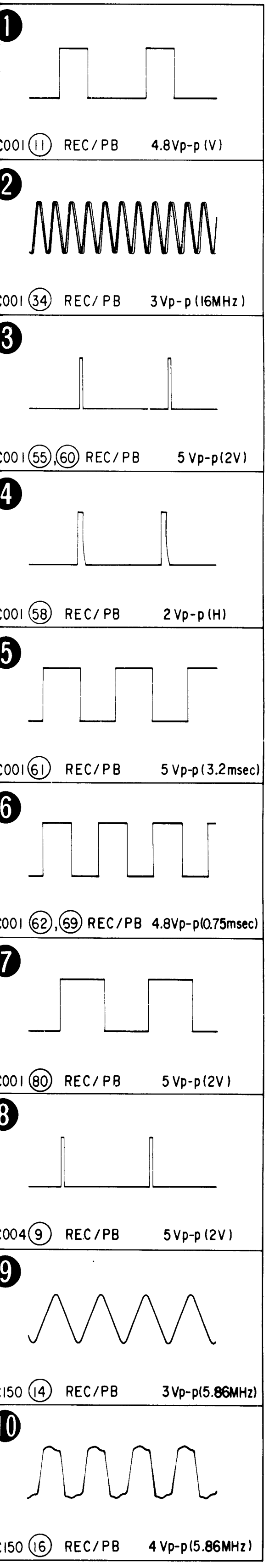
19
20
21
22
23
24
25
26
27
28
(See page 174.)
TO SW-168 BOARD CN702
CN004 6P
EVF
EVF GND
VIDEO
TALLY
UNREG
UNREG GND
(See page 139.)
TO VA-64 BOARD (1/2) W650 (VIDEO(1))
W006 46P FP-240
VIDEO 5V
VIDEO 5V
VIDEO GND
VIDEO G
AU GND
AU 5V
C SYNC
VOW
VOB I
V MUTE
V SWP
JOG
H CHG
JOG VB
MONO/STE DET
S IN
SCK
DATA TO SLV
VI S/P STB
SYSTEM RESET
VI CS
TITLE Y
TITLE C
Y BLK
3.58MHz FSC
EVER 0C
-5V
HI8/NOR
REC Y RF
PB Y RF
REC C RF
PB C RF
RF GND
REC AFM RF
PB AFM RF
DOP
SYNC DET
EVF VIDEO
EDIT
RF SWP
JACK OUT
JC MONO/STE DET
A/B Y
C IN
DS ON
DTL CONT
(B-18) Q002 SWITCH
(B-18) Q003 SWITCH
(C-19) IC104
(H-12) Q008 BUFFER
(G-13) Q009 AMP
IC104 TC7S08F
(B-3) IC101
CHRACTOR GENERATOR CONTROL
IC101 MB673198
(B-20) Q018 JOG/NORM SWITCH
(B-20) Q017 JOG/NORM SWITCH
(A-4) IC102
CHARACTOR GENERATOR
IC102 μPD6451AGT
(D-20) Q012 SWITCH
IC008 (C-3)
NON-VOLTAGE MEMORY
IC008 BR93C46F
IC007 MC14028
IC007 (D-3)
CHIP SELECT
CN005 30P
ΦDS B
ΦDS W
VD
HD
VTR POWER
UNREG
SS 5V
SS GND
RF SWP
TITLE Y
SS GND
TITLE C
SS 5V
A/B Y
C IN
Y BLK
EVER 0C
TALLY
EE SCK
DATA TO MODE
DATA TO EE
EJECT
SCK
DATA TO SLV
DATA TO MST
SYSTEM RESET
SYSTEM SYNC
SELECT 1
SELECT 2
SELECT 3
FD-44 BOARD CN201
(See page 163.)
PS101 ICP-N10 (0.4A)
no mark : REC/PB mode (VTR)
( ) : REC mode
⟨ ⟩ : PB mode
*: Impossible to measure the voltage at the marked points.
CN003 20P B to B
VI 5V
VI GND
AU GND
SS GND
EVF GND
PCM GND
AU 5V
EVF 5V
SS 5V
TALLY
UNREG GND
CAP ERROR
CAP VS
DRUM ERROR
DRUM VS
VTR POWER
M UNREG
MOTOR GND
EJECT
UNREG
TO FU-97 BOARD CN102
(See page 183.)
(H-17) D001 DAN202U
(I-17) Q010 SWITCH
Q010 FMG5
IC150 CXA1204Q
RAMP
REC AREA
AF REC
REC PCM
PB PCM RF
RF GND
Y RF OUT
REC C RF
REC AFM RF
REC ATF RF
VIDEO 5V
RP PB MODE
VA PB MODE
VIDEO GND
DUB AREA
UNIFE ON
HF SWP
PB C RF
PB Y RF
CLOG
SP/UNLP DET
E DET
ME/UN(MP)
E/UN(L)
H CHG
DOP
PB RF OUT
SS 5V
SS GND
JOG DD
SP/UNLP EE
C SYNC
FSC
DTL CONT
VA PB 5V
TO SS-134 (1/2) BOARD (R/P AMP)
(See page 138.)

SERVO, SYSTEM CONTROL SERVO, SYSTEM CONTROL

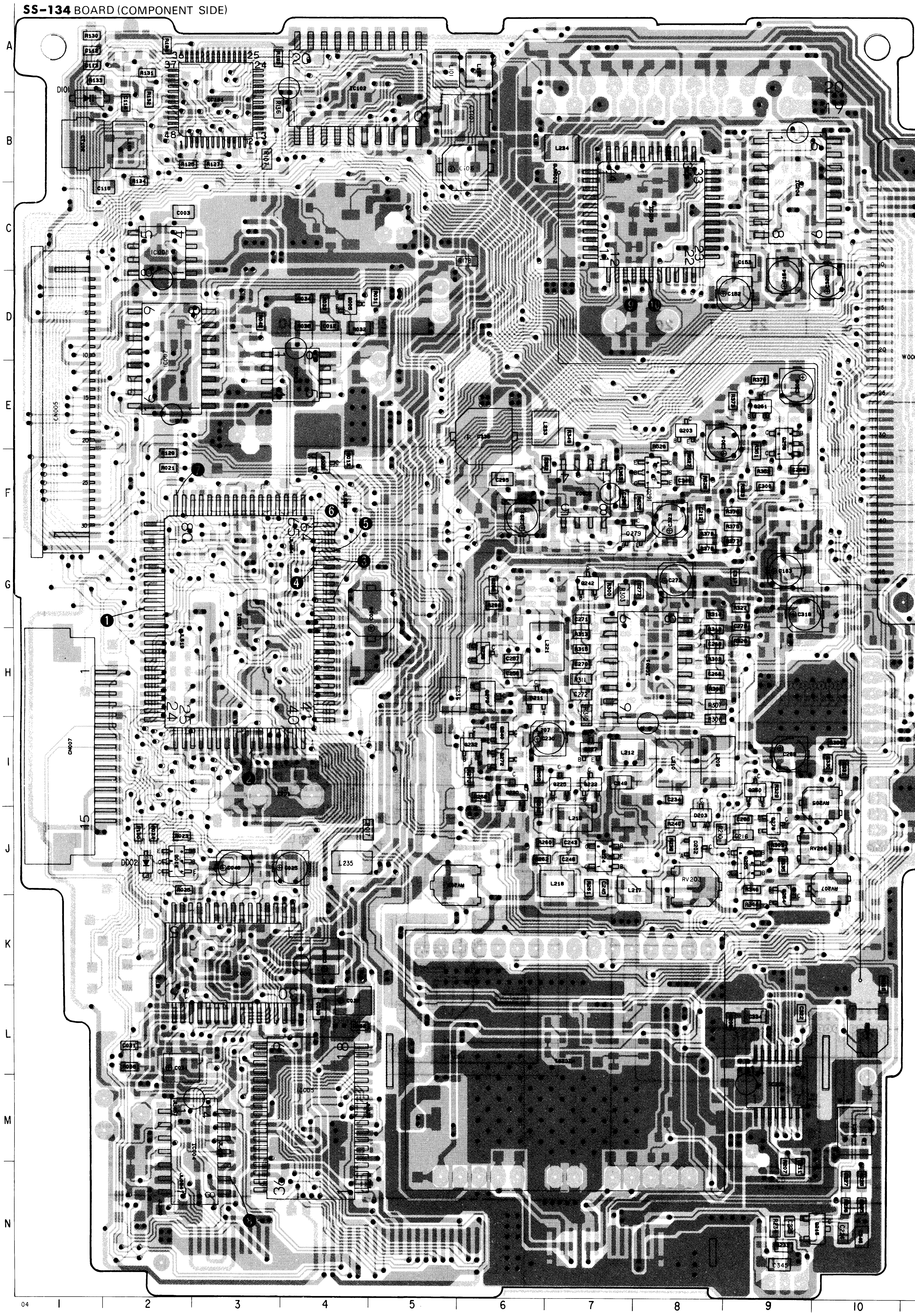
SS-134 (R/P AMP, SERVO, SYSTEM CONTROL), CC-60 (RELAY), FP-89 (MODE SWITCH, SENSOR), FP-90 (TAPE SELECT SWITCH, SENSOR) PRINTED WI

—Ref. No. SS-134, CC-60 BOARDS : 2000 series, FP-89, FP-90 BOARDS : 5000 series—

S-134 BOARD
ERVO, SYSTEM CONTROL)



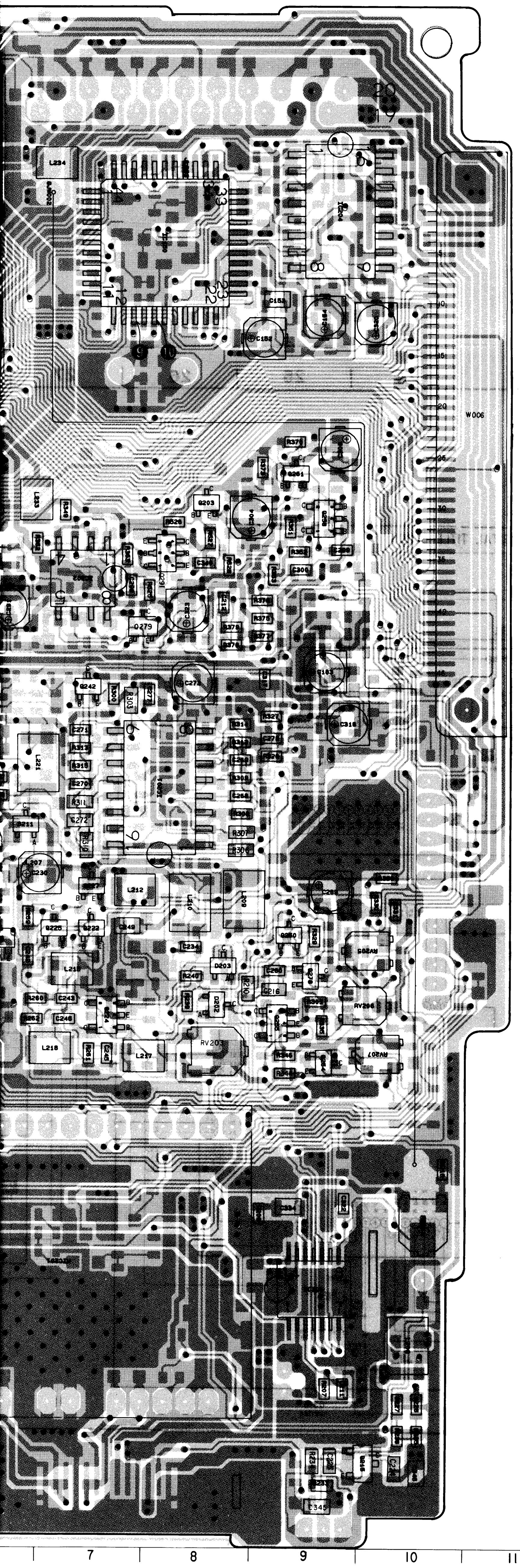
SS-134 BOARD (COMPONENT SIDE)



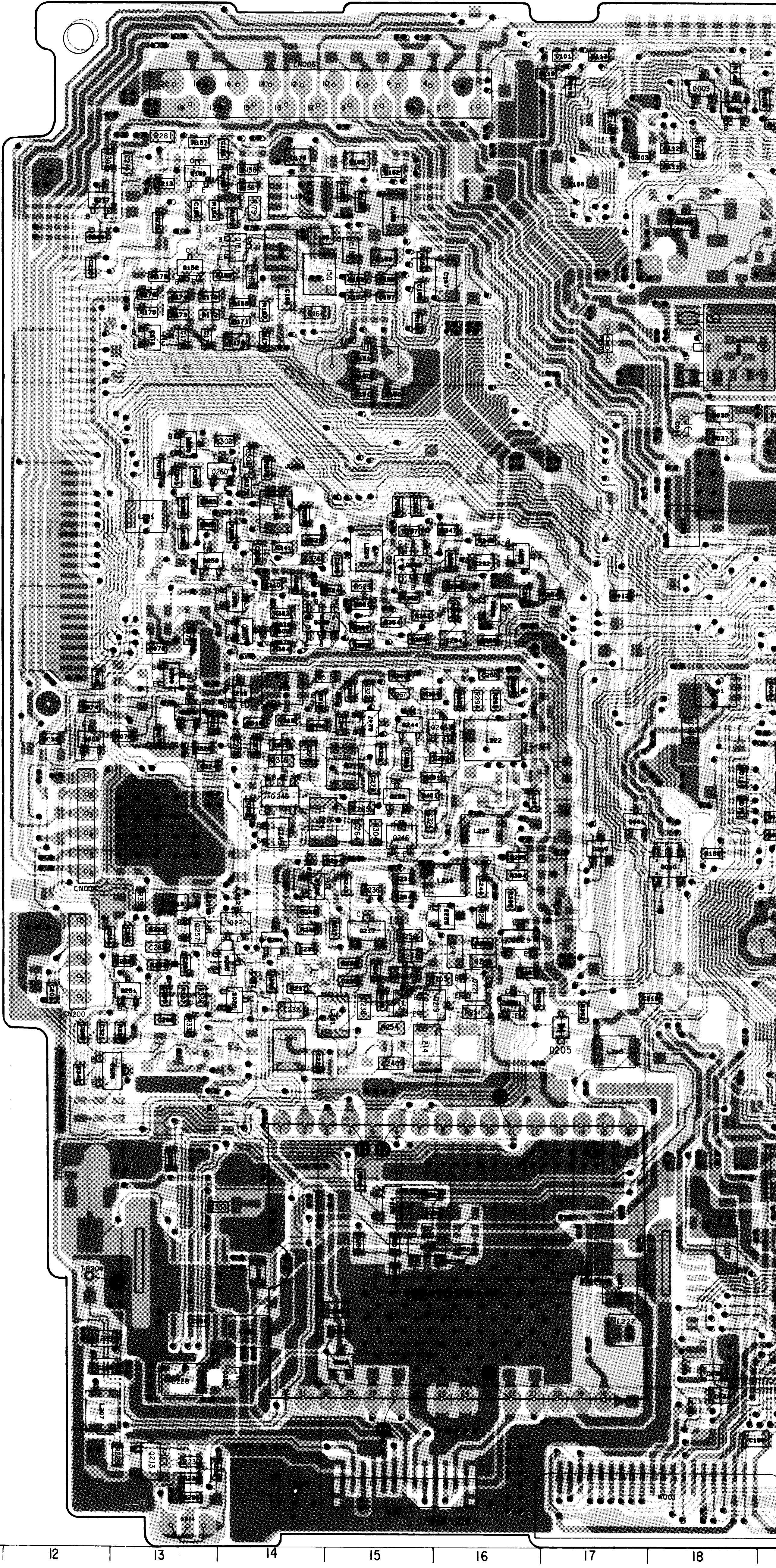
A
B
C
D
E
F
G
H
I
J
K
L
M
N
04
1
2
3
4
5
6
7
8
9
10
CN005
CN007
D101
D002
L235
RV203
L234
C345

< DIODE >		
D001	8-719-941-86	DAN20
D002	8-719-404-46	MA110
D101	8-719-949-46	1T32
D202	8-719-941-86	DAN20
D203	8-719-941-86	DAN20
D205	8-719-404-46	MA110
D208	8-719-941-86	DAN20
D210	8-719-941-86	DAN20
D211	8-719-941-86	DAN20
< IC >		
IC001	8-752-830-81	CXP80
IC003	8-759-998-98	LM358
IC004	8-759-148-05	CXA80

TCH, SENSOR), FP-90 (TAPE SELECT SWITCH, SENSOR) PRINTED WIRING BOARDS


W006
7
8
9
10
11

SS-134 BOARD (CONDUCTOR SIDE)

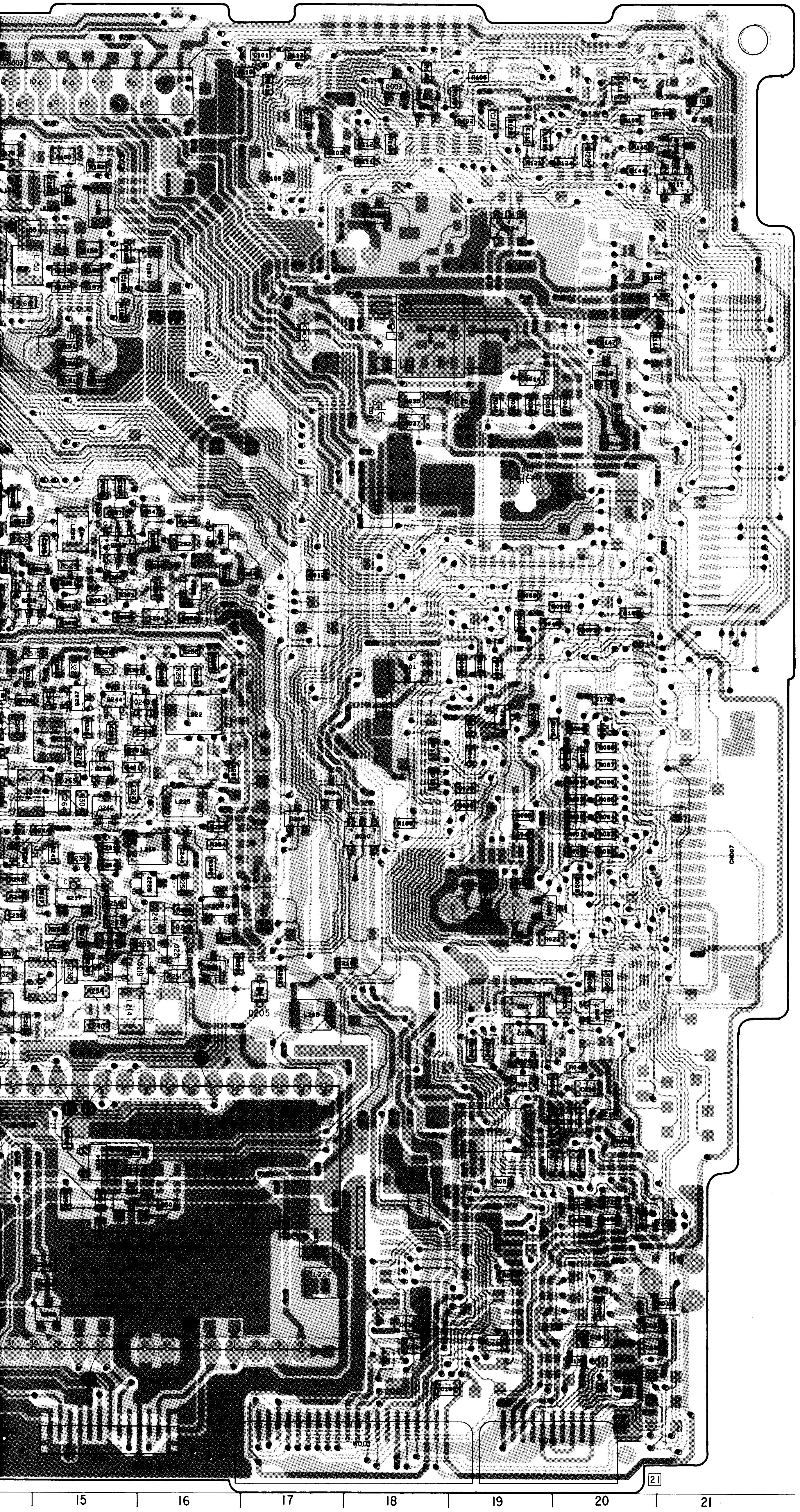

CN003
CN002
D205
L227
W002
12
13
14
15
16
17
18

< DIODE >

D001	8-719-941-86	DAN202U
D002	8-719-404-46	MA110
D101	8-719-949-46	1T32
D202	8-719-941-86	DAN202U
D203	8-719-941-86	DAN202U
D205	8-719-404-46	MA110
D208	8-719-941-86	DAN202U
D210	8-719-941-86	DAN202U
D211	8-719-941-86	DAN202U

< IC >

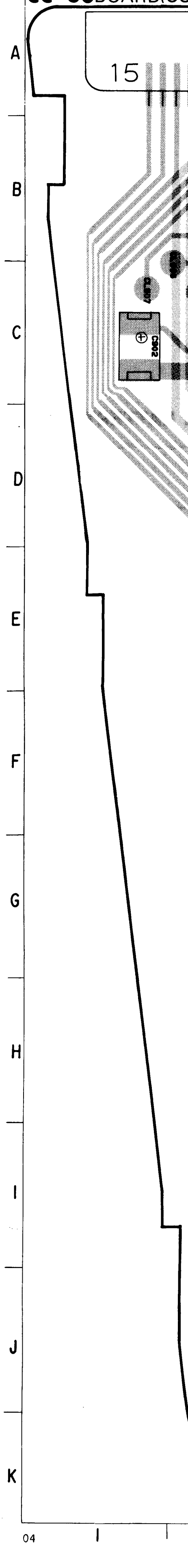
IC001	8-752-830-81	CXP80116-837Q
IC003	8-759-998-98	LM358D
IC004	8-759-148-05	CXA8010M
IC005	8-759-823-65	MCD002AM
IC006	8-759-990-55	CXA8006M
IC007	8-759-008-95	MC14028BF
IC008	8-759-748-72	BR93C46F
IC101	8-759-970-80	MB673198U
IC102	8-759-153-41	uPD6451AGT-611-E1
IC104	8-759-234-20	TC7S08F
IC150	8-752-035-48	CXA1204Q
IC201	8-759-012-00	MC10H116M
IC202	8-759-998-92	LM393D
IC204	8-759-998-32	CXD2107M
IC205	8-759-148-49	CXA1443N



< TRANSISTOR >

Q001	8-729-907-00	DTC114EU
Q002	8-729-905-12	DTA144EU
Q003	8-729-905-18	DTC144EU
Q004	8-729-820-47	2SB1202FAT
Q005	8-729-905-35	2SC4081-R
Q007	8-729-905-35	2SC4081-R
Q008	8-729-905-35	2SC4081-R
Q009	8-729-905-35	2SC4081-R
Q010	8-729-907-03	FMG5
Q011	8-729-905-18	DTC144EU
Q012	8-729-905-18	DTC144EU
Q014	8-729-822-48	FC101
Q017	8-729-907-03	FMG5
Q018	8-729-905-18	DTC144EU
Q023	8-729-921-08	DTC144TU
Q150	8-729-905-23	2SA1576-R
Q151	8-729-905-18	DTC144EU
Q152	8-729-905-35	2SC4081-R
Q153	8-729-905-23	2SA1576-R
Q202	8-729-905-35	2SC4081-R
Q203	8-729-905-35	2SC4081-R
Q213	8-729-216-22	2SA1162G
Q214	8-729-119-76	2SA1175-HFE
Q215	8-729-216-22	2SA1162G
Q217	8-729-102-07	2SC2223-F13
Q218	8-729-905-35	2SC4081-R
Q219	8-729-905-35	2SC4081-R
Q221	8-729-905-35	2SC4081-R
Q222	8-729-907-00	DTC114EU
Q223	8-729-905-35	2SC4081-R
Q224	8-729-904-07	FMG2
Q225	8-729-905-45	DTA143EU
Q227	8-729-905-35	2SC4081-R
Q229	8-729-141-48	2SB624-BV345
Q230	8-729-141-48	2SB624-BV345
Q231	8-729-905-18	DTC144EU
Q232	8-729-905-18	DTC144EU
Q233	8-729-102-07	2SC2223-F13
Q234	8-729-102-07	2SC2223-F13
Q238	8-729-117-31	2SC4177-L5
Q239	8-729-905-18	DTC144EU
Q240	8-729-905-18	DTC144EU
Q242	8-729-117-31	2SC4177-L5
Q243	8-729-905-18	DTC144EU
Q244	8-729-140-63	2SA1611-M5
Q245	8-729-117-31	2SC4177-L5
Q246	8-729-905-18	DTC144EU
Q247	8-729-905-35	2SC4081-R
Q248	8-729-903-10	FMW1
Q249	8-729-905-18	DTC144EU
Q250	8-729-905-12	DTA144EU
Q251	8-729-905-35	2SC4081-R
Q252	8-729-102-07	2SC2223-F13
Q254	8-729-905-35	2SC4081-R
Q255	8-729-904-07	FMG2
Q256	8-729-905-12	DTA144EU
Q257	8-729-905-18	DTC144EU
Q258	8-729-903-10	FMW1
Q259	8-729-905-35	2SC4081-R
Q260	8-729-905-35	2SC4081-R
Q261	8-729-905-23	2SA1576-R
Q262	8-729-905-23	2SA1576-R
Q263	8-729-907-26	IMX1
Q265	8-729-905-35	2SC4081-R
Q266	8-729-905-35	2SC4081-R
Q267	8-729-905-35	2SC4081-R
Q268	8-729-905-23	2SA1576-R
Q269	8-729-907-26	IMX1
Q270	8-729-905-12	DTA144EU
Q272	8-729-922-94	DTC143TU
Q273	8-729-141-48	2SB624-BV345
Q277	8-729-905-35	2SC4081-R
Q278	8-729-905-35	2SC4081-R
Q279	8-729-905-18	DTC144EU
Q280	8-729-905-35	2SC4081-R
Q291	8-729-907-26	IMX1
Q295	8-729-905-35	2SC4081-R

CC-60BOARD(CO



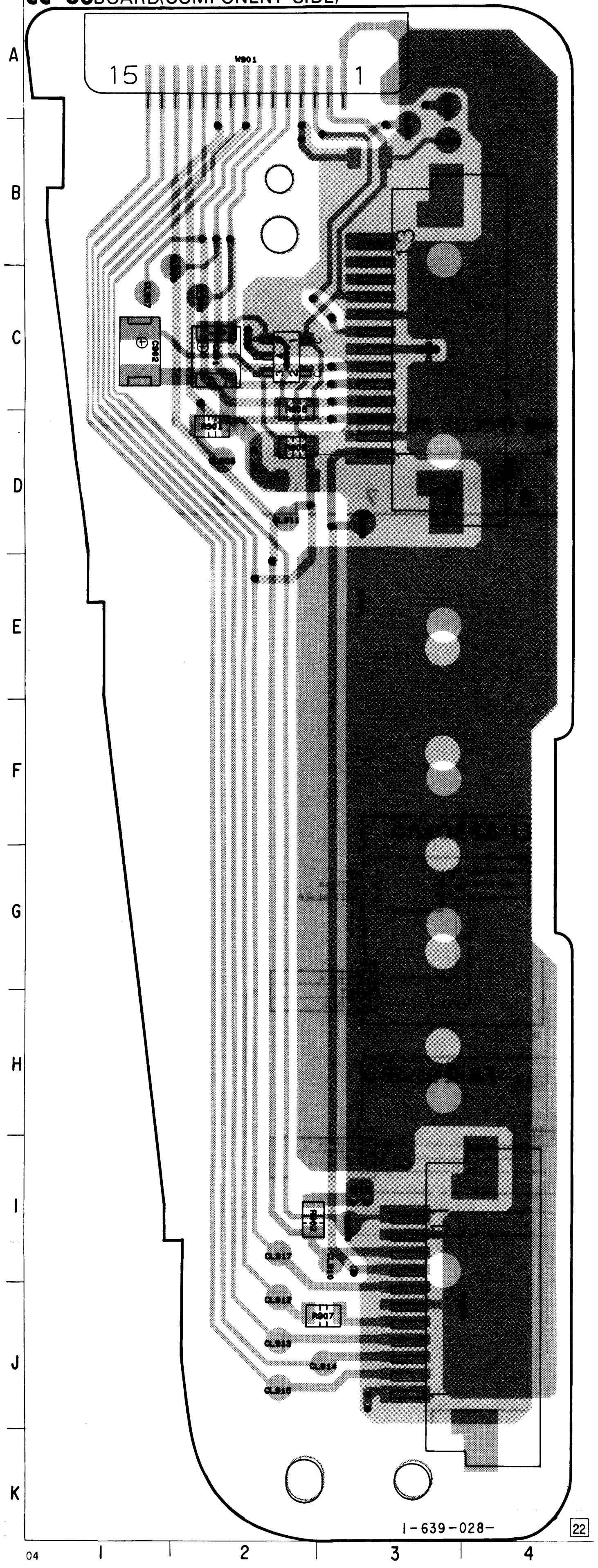
< TRANSISTOR >

Q901	8-729-902-9

OR >

-729-907-00	DTC114EU
-729-905-12	DTA144EU
-729-905-18	DTC144EU
-729-820-47	2SB1202FAT
-729-905-35	2SC4081-R
-729-905-35	2SC4081-R
-729-905-35	2SC4081-R
-729-905-35	2SC4081-R
-729-907-03	FMG5
-729-905-18	DTC144EU
-729-905-18	DTC144EU
-729-822-48	FC101
-729-907-03	FMG5
-729-905-18	DTC144EU
-729-921-08	DTC144TU
-729-905-23	2SA1576-R
-729-905-18	DTC144EU
-729-905-35	2SC4081-R
-729-905-23	2SA1576-R
-729-905-35	2SC4081-R
-729-905-35	2SC4081-R
-729-216-22	2SA1162G
-729-119-76	2SA1175-HFE
-729-216-22	2SA1162G
-729-102-07	2SC2223-F13
-729-905-35	2SC4081-R
-729-905-35	2SC4081-R
-729-905-35	2SC4081-R
-729-907-00	DTC114EU
-729-905-35	2SC4081-R
-729-904-07	FMG2
-729-905-45	DTA143EU
-729-905-35	2SC4081-R
-729-141-48	2SB624-BV345
-729-141-48	2SB624-BV345
-729-905-18	DTC144EU
-729-905-18	DTC144EU
-729-102-07	2SC2223-F13
-729-102-07	2SC2223-F13
-729-117-31	2SC4177-L5
-729-905-18	DTC144EU
-729-905-18	DTC144EU
-729-117-31	2SC4177-L5
-729-905-18	DTC144EU
-729-140-63	2SA1611-M5
-729-117-31	2SC4177-L5
-729-905-18	DTC144EU
-729-905-35	2SC4081-R
-729-903-10	FMW1
-729-905-18	DTC144EU
-729-905-12	DTA144EU
-729-905-35	2SC4081-R
-729-102-07	2SC2223-F13
-729-905-35	2SC4081-R
-729-904-07	FMG2
-729-905-12	DTA144EU
-729-905-18	DTC144EU
-729-903-10	FMW1
-729-905-35	2SC4081-R
-729-905-35	2SC4081-R
-729-905-23	2SA1576-R
-729-905-23	2SA1576-R
-729-907-26	IMX1
-729-905-35	2SC4081-R
-729-905-35	2SC4081-R
-729-905-35	2SC4081-R
-729-905-23	2SA1576-R
-729-907-26	IMX1
-729-905-12	DTA144EU
-729-922-94	DTC143TU
-729-141-48	2SB624-BV345
-729-905-35	2SC4081-R
-729-905-35	2SC4081-R
-729-905-18	DTC144EU
-729-905-35	2SC4081-R
-729-907-26	IMX1
-729-905-35	2SC4081-R

CC-60 BOARD(COMPONENT SIDE)


A
B
C
D
E
F
G
H
I
J
K
15
1
W901
1-639-028-
22
04
1
2
3
4

< TRANSISTOR >

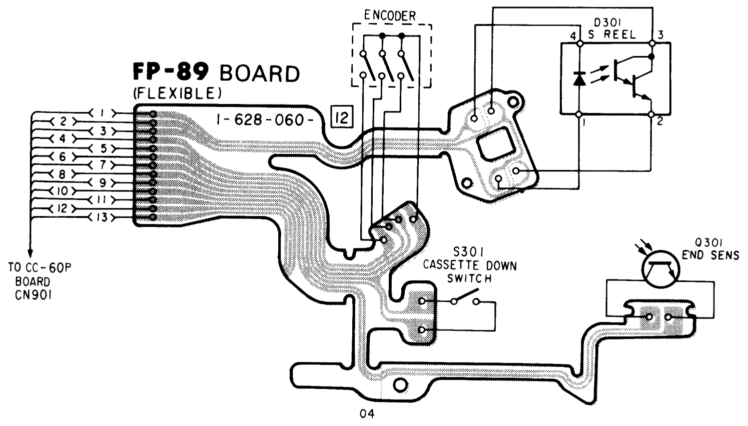
Q901　8-729-902-93　FMG4

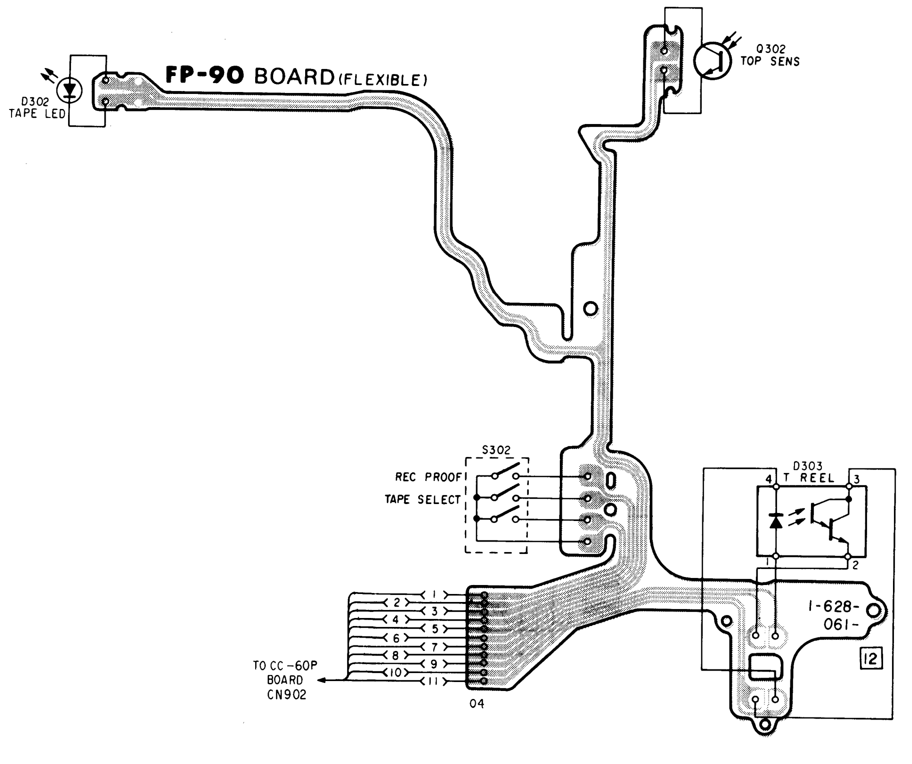
< DIODE >

D301　8-719-801-55　TLP907-0

< TRANSISTOR >

Q301　8-729-906-48　EE-TP109


FP-89 BOARD
(FLEXIBLE)
ENCODER
D301
S REEL
4
3
1
2
1-628-060-
12
1
2
3
4
5
6
7
8
9
10
11
12
13
TO CC-60P
BOARD
CN901
S301
CASSETTE DOWN
SWITCH
Q301
END SENS
04


D302
TAPE LED
FP-90 BOARD (FLEXIBLE)
Q302
TOP SENS
S302
REC PROOF
TAPE SELECT
D303
T REEL
4
3
1
2
1-628-
061-
12
1
2
3
4
5
6
7
8
9
10
11
TO CC-60P
BOARD
CN902
04

< DIODE >

D302　8-719-801-55　TLP907-0

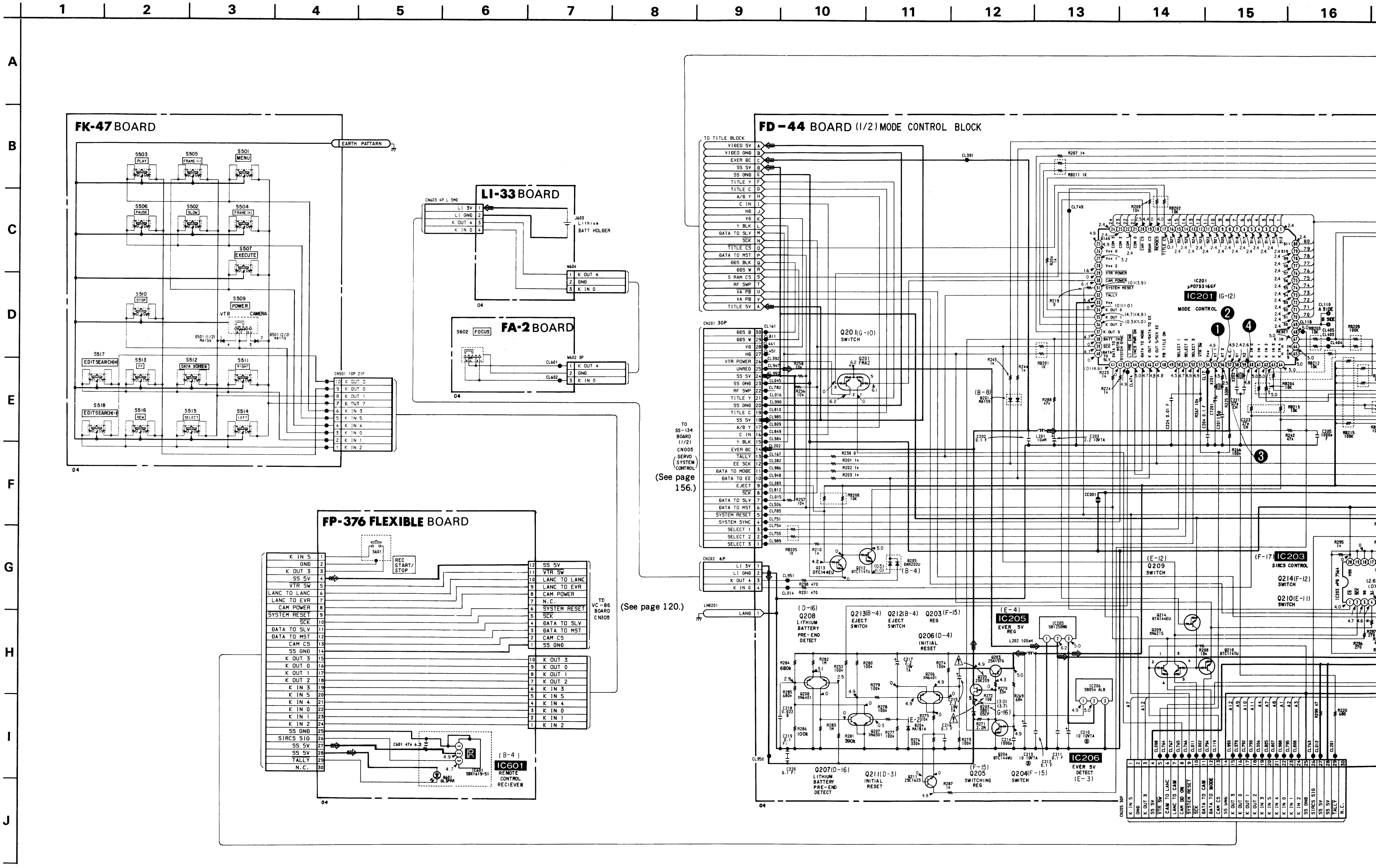
D303　8-719-940-81　GL-452S

< TRANSISTOR >

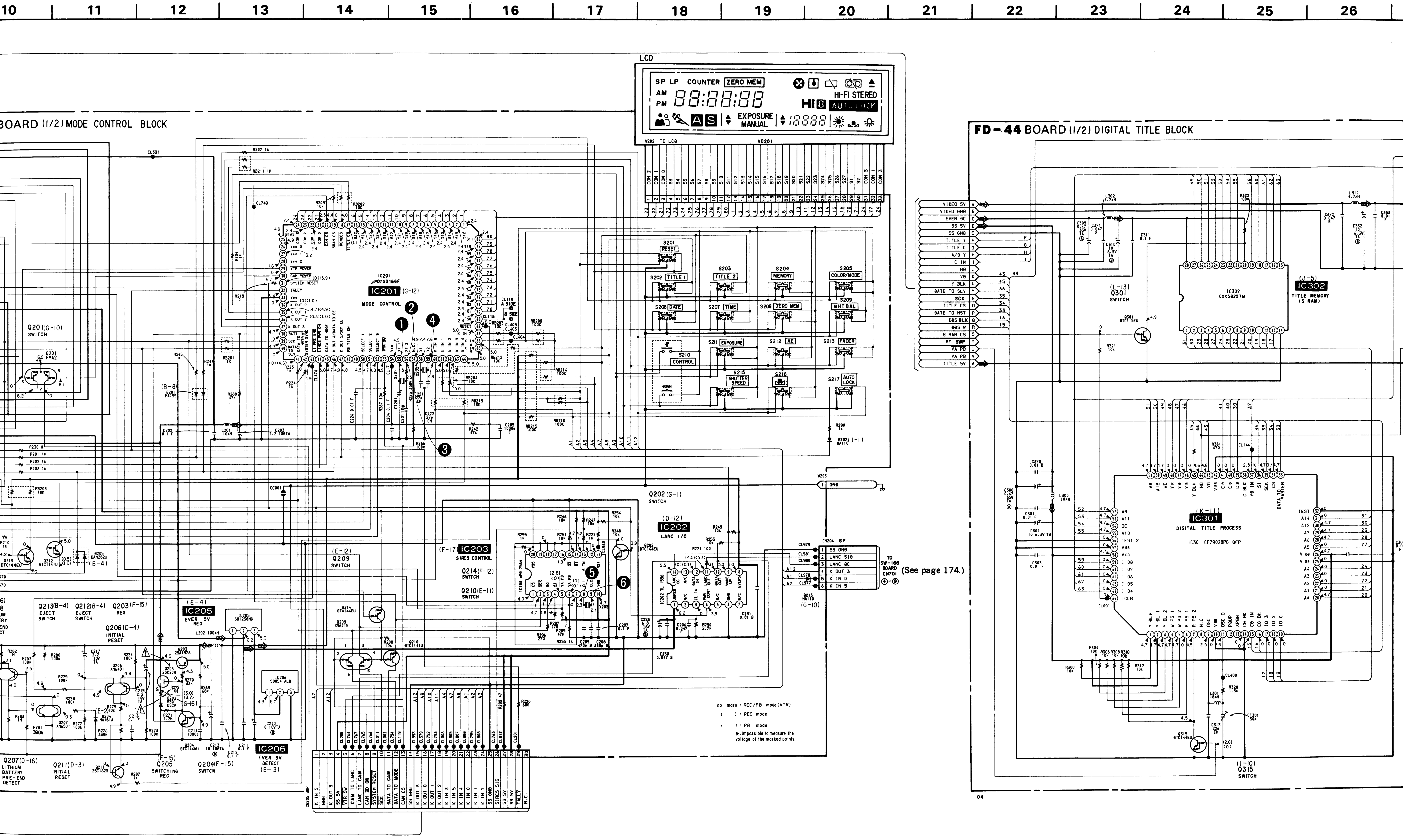
Q302　8-729-906-48　EE-TP109

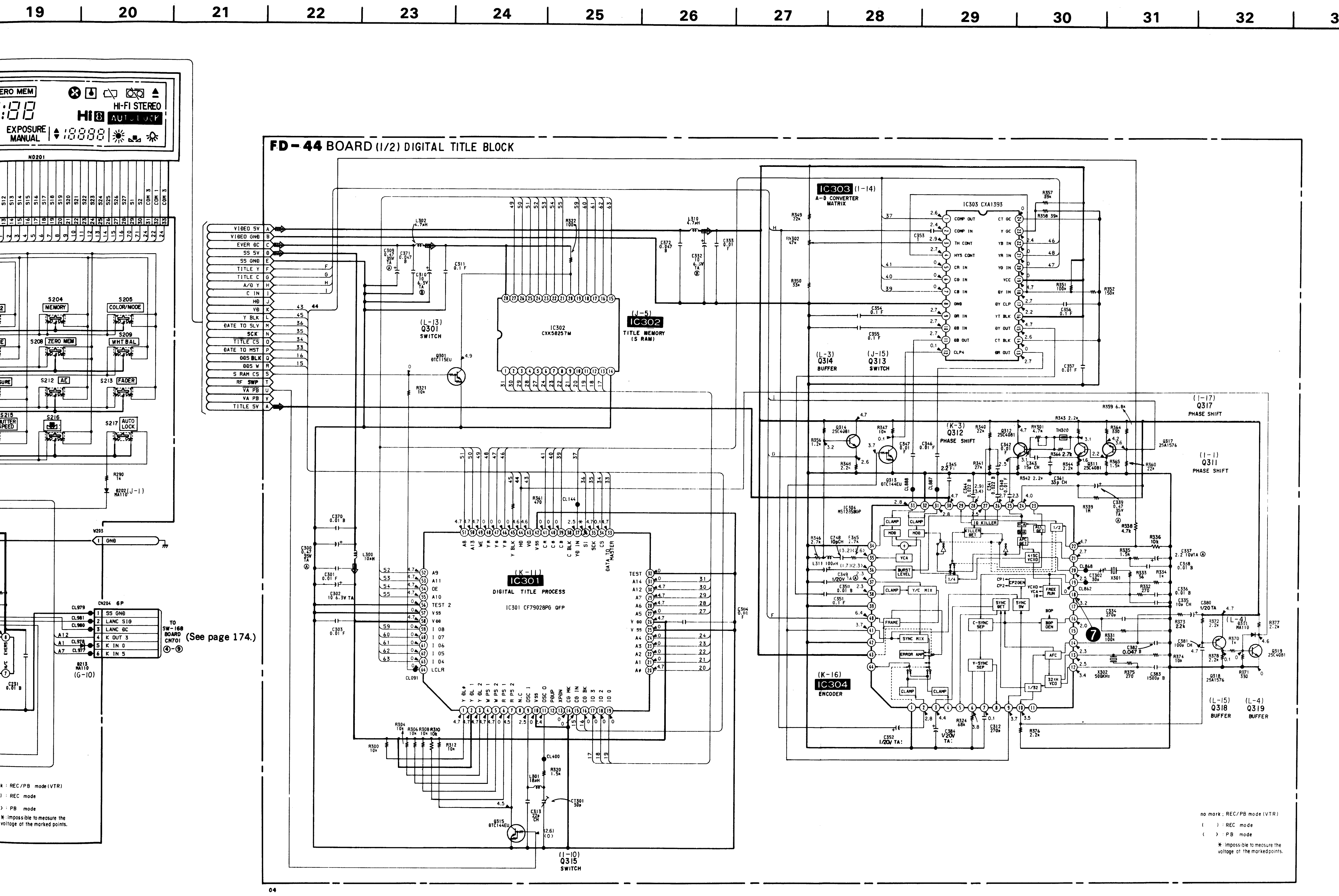
FD-44 (MODE CONTROL, CHARACTOR GENERATOR), FK-47 (FUNCTION SWITCH), FA-2 (FOCUS SWITCH), LI-33 (LITHIUM BATTERY HOLDER), FP-376 (REMOTE COMMAND RECIEVER, REC SWITCH) SCHEMATIC DIAGRAM

—Ref. No. FD-44 BOARD: 4000 series, FK-47, FA-2, LI-33, FP-376 BOARDS: 5000 series—

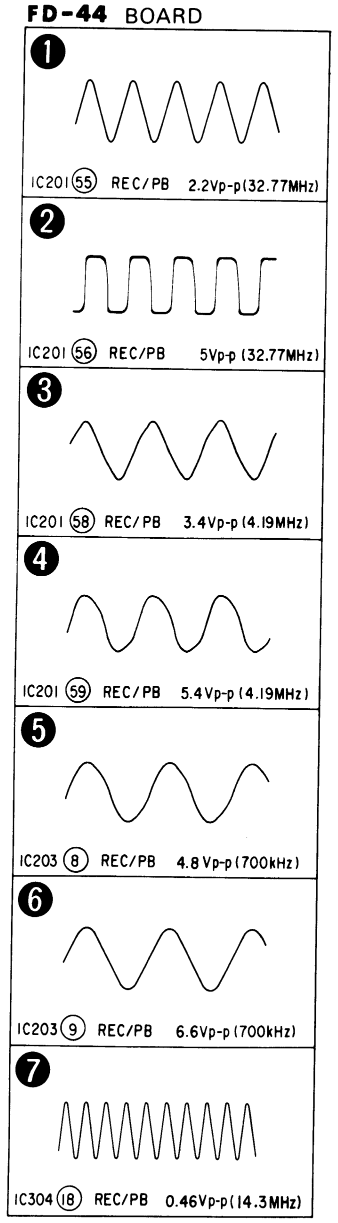


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
FK-47 BOARD
EARTH PATTERN
S503 PLAY
S505 FRAME (-)
S501 MENU
S506 PAUSE
S502 SLOW
S504 FRAME (+)
S507 EXECUTE
S510 STOP
S509 POWER
VTR
CAMERA
S517 EDITSEARCH(+)
S513 FF
S512 DATA SCREEN
S511 RIGHT
S518 EDITSEARCH(-)
S516 REW
S515 SELECT
S514 LEFT
CN501 10P ZIF
K OUT 3
K OUT 0
K OUT 1
K OUT 2
K IN 3
K IN 5
K IN 4
K IN 0
K IN 1
K IN 2
LI-33 BOARD
CN603 4P L SMD
LI 3V
LI GND
K OUT 4
K IN 0
J603 Lithium BATT HOLDER
W604
GND
FA-2 BOARD
S602 FOCUS
W602 3P
CL601
CL602
FP-376 FLEXIBLE BOARD
S601
REC START/STOP
K IN 5
GND
SS 5V
VTR SW
LANC TO LANC
LANC TO EVR
CAM POWER
SYSTEM RESET
SCK
DATA TO SLV
DATA TO MST
CAM CS
SS GND
SIRCS SIG
TALLY
N.C.
C601 47μ 6.3
(B-4)
IC601
REMOTE CONTROL RECIEVER
SBX1619-51
D601 GL5PR8
TO VC-86 BOARD CN305
(See page 120.)
FD-44 BOARD (1/2) MODE CONTROL BLOCK
TO TITLE BLOCK
VIDEO 5V
VIDEO GND
EVER 8C
SS 5V
SS GND
TITLE Y
TITLE C
A/D Y
C IN
HD
VD
Y BLK
DATA TO SLV
SCK
TITLE CS
DATA TO MST
OSD BLK
OSD W
S RAM CS
RF SWP
VA PB
TITLE 5V
CN201 30P
OSD B
VTR POWER
UNREG
EE SCK
DATA TO MODE
DATA TO EE
EJECT
SYSTEM SYNC
SELECT 1
SELECT 2
SELECT 3
TO SS-134 BOARD (1/2) CN005 (SERVO SYSTEM CONTROL)
(See page 156.)
CN202 4P
LN6201
LAND
Q201 (G-10) SWITCH
Q201 FMA2
IC201 μPD75316GF
IC201 (G-12)
MODE CONTROL
IC205
(E-4)
EVER 5V REG
IC205 S81250HG
L202 100μH
IC206
EVER 5V DETECT
(E-3)
IC206 S8054 ALB
(D-16)
Q208 LITHIUM BATTERY PRE-END DETECT
Q213 (B-4) EJECT SWITCH
Q212 (B-4) EJECT SWITCH
Q203 (F-15) REG
Q206 (D-4) INITIAL RESET
Q207 (D-16) LITHIUM BATTERY PRE-END DETECT
Q211 (D-3) INITIAL RESET
(F-15) Q205 SWITCHING REG
Q204 (F-15) SWITCH
(E-12) Q209 SWITCH
(F-17) IC203
SIRCS CONTROL
Q214 (F-12) SWITCH
Q210 (E-11) SWITCH
CL110 A SIDE
B SIDE
CN205 30P


10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
BOARD (1/2) MODE CONTROL BLOCK
LCD
SP LP COUNTER ZERO MEM
AM
PM
HI-FI STEREO
Hi8
EXPOSURE
MANUAL
IC201
μPD75316GF
IC201 (G-12)
MODE CONTROL
Q201 (G-10)
SWITCH
S201 RESET
S202 TITLE 1
S203 TITLE 2
S204 MEMORY
S205 COLOR/MODE
S206 DATE
S207 TIME
S208 ZERO MEM
S209 WHT BAL
S210 CONTROL
S211 EXPOSURE
S212 AE
S213 FADER
S215 SHUTTER SPEED
S216
S217 AUTO LOCK
Q202 (G-1)
SWITCH
(D-12)
IC202
LANC I/O
(F-17) IC203
SIRCS CONTROL
Q214 (F-12)
SWITCH
Q210 (E-11)
SWITCH
(E-12)
Q209
SWITCH
(E-4)
IC205
EVER 5V
REG
IC206
EVER 5V
DETECT
(E-3)
Q213 (B-4)
EJECT
SWITCH
Q212 (B-4)
EJECT
SWITCH
Q203 (F-15)
REG
Q206 (D-4)
INITIAL
RESET
Q207 (D-16)
LITHIUM
BATTERY
PRE-END
DETECT
Q211 (D-3)
INITIAL
RESET
(F-15)
Q205
SWITCHING
REG
Q204 (F-15)
SWITCH
CN204 6P
SS GND
LANC SIG
LANC DC
K OUT 3
K IN 0
K IN 5
TO SW-168 BOARD CNT01 ④-⑨ (See page 174.)
CN205 30P
no mark : REC/PB mode (VTR)
( ) : REC mode
< > : PB mode
✱ : Impossible to measure the voltage at the marked points.
FD-44 BOARD (1/2) DIGITAL TITLE BLOCK
VIDEO 5V
VIDEO GND
EVER 6C
SS 5V
SS GND
TITLE Y
TITLE C
A/O Y
C IN
HD
VD
Y BLK
GATE TO SLV
SCK
TITLE CS
GATE TO MST
005 BLK
005 W
S RAM CS
RF SWP
VA PB
VA PB
TITLE 5V
(L-13)
Q301
SWITCH
IC302
CXK5825TM
(J-5)
IC302
TITLE MEMORY
(S RAM)
(K-11)
IC301
DIGITAL TITLE PROCESS
IC301 CF79028PG QFP
(I-10)
Q315
SWITCH


19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
FD-44 BOARD (1/2) DIGITAL TITLE BLOCK
IC301 (K-11) DIGITAL TITLE PROCESS
IC301 CF79028PG QFP
IC302 (J-5) TITLE MEMORY (S RAM)
IC302 CXK58257M
IC303 (I-14) A-D CONVERTER MATRIX
IC303 CXA1393
IC304 (K-16) ENCODER
Q301 (L-13) SWITCH
Q312 (K-3) PHASE SHIFT
Q313 (J-15) SWITCH
Q314 (L-3) BUFFER
Q315 (I-10) SWITCH
Q317 (I-17) PHASE SHIFT
Q311 (I-1) PHASE SHIFT
Q318 (L-15) BUFFER
Q319 (L-4) BUFFER
TO SW-168 BOARD CN701 ④-⑨ (See page 174.)
ZERO MEM
HI-FI STEREO
Hi8
EXPOSURE MANUAL
S204 MEMORY
S205 COLOR/MODE
S208 ZERO MEM
S209 WHT BAL
S212 AE
S213 FADER
S215 SHUTTER SPEED
S216
S217 AUTO LOCK
VIDEO 5V
VIDEO GND
EVER 6C
SS 5V
SS GND
TITLE Y
TITLE C
A/D Y
C IN
HD
VD
Y BLK
DATE TO SLV
SCK
TITLE CS
DATE TO MST
DDS BLK
DDS W
S RAM CS
RF SWP
VA PB
VA PB
TITLE 5V
CN204 6P
SS GND
LANC SIO
LANC 0C
K OUT 3
K IN 0
K IN 5
no mark : REC/PB mode (VTR)
( ) : REC mode
( ) : PB mode
✻ : Impossible to measure the voltage at the marked points.

FD-44 BOARD


❶ IC201 (55) REC/PB 2.2Vp-p (32.77MHz)
❷ IC201 (56) REC/PB 5Vp-p (32.77MHz)
❸ IC201 (58) REC/PB 3.4Vp-p (4.19MHz)
❹ IC201 (59) REC/PB 5.4Vp-p (4.19MHz)
❺ IC203 ⑧ REC/PB 4.8Vp-p (700kHz)
❻ IC203 ⑨ REC/PB 6.6Vp-p (700kHz)
❼ IC304 (18) REC/PB 0.46Vp-p (14.3MHz)

< DIODE >

D201	8-719-940-45	DWA010
D202	8-719-404-46	MA110
D203	· 8-719-938-72	SB01-05CP
D204	8-719-420-36	MA151A
D205	8-719-941-86	DAN202U
D213	8-719-404-46	MA110
D301	8-719-404-46	MA110

< IC >

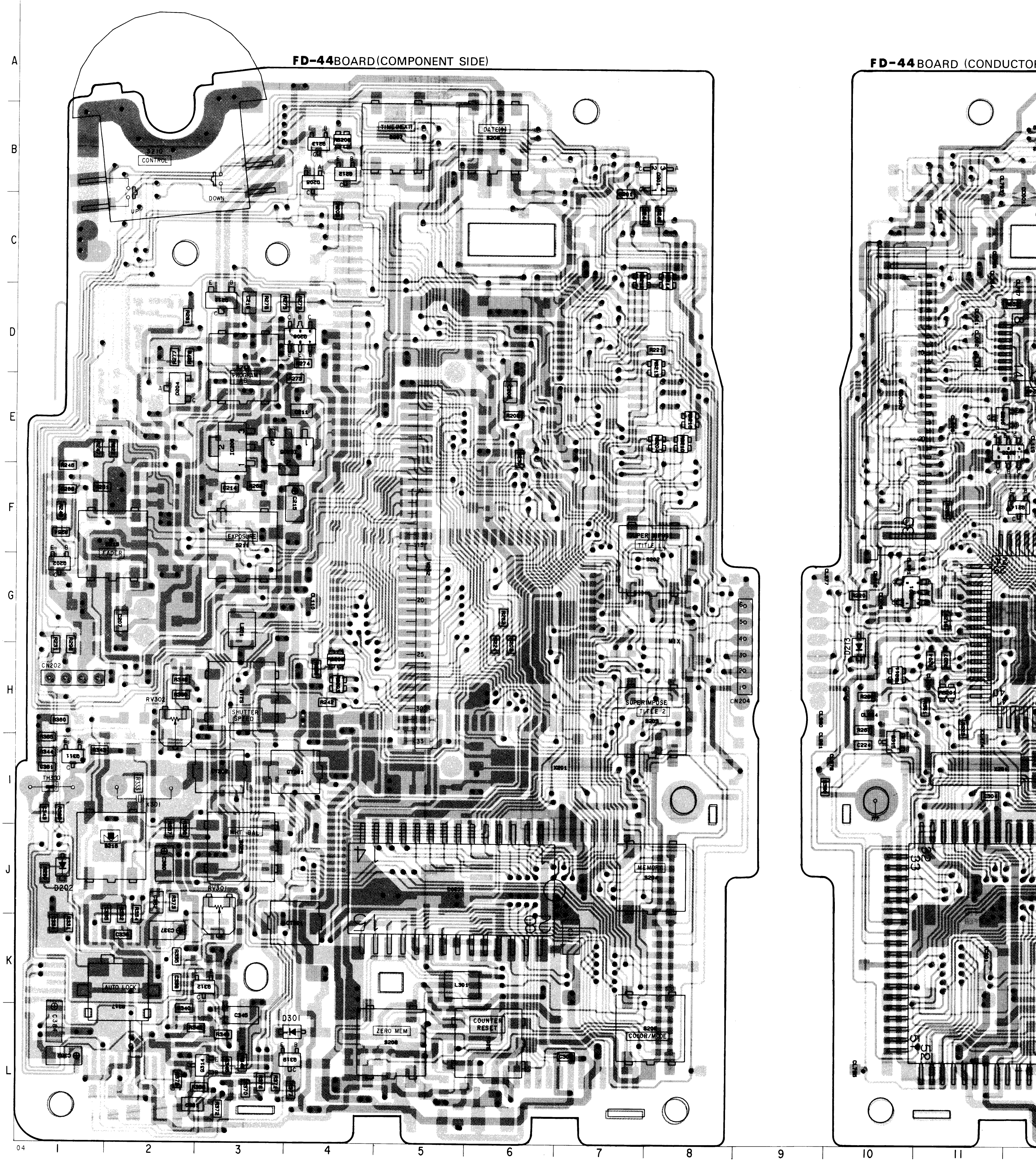
IC201	8-759-154-86	uPD75316GF-121-3B9
IC202	8-759-999-02	TL1596CDB
IC203	8-759-145-63	uPD7564G-540
IC205	8-759-937-54	S-81250HG-RD-S
IC206	8-759-937-56	S-8054ALB-LM-S
IC301	8-759-998-30	CF79028PG
IC302	8-752-330-66	CXK58257M-10L
IC303	8-752-039-49	CXA1393AN
IC304	8-759-634-47	M51285BGP

< TRANSISTOR >

Q201	8-729-904-20	FMA2
Q202	8-729-905-18	DTC144EU
Q203	8-729-905-24	2SA1576-S
Q204	8-729-905-15	DTC144WU
Q205	8-729-109-44	2SK94
Q206	8-729-402-78	XN6401
Q207	8-729-402-19	XN6501
Q208	8-729-402-78	XN6401
Q209	8-729-403-10	XN6215
Q210	8-729-905-XX	DTC114TU
Q211	8-729-100-66	2SC1623
Q212	8-729-905-XX	DTC114TU
Q213	8-729-905-18	DTC144EU
Q214	8-729-905-12	DTA144EU
Q301	8-729-925-91	DTC115EU

FD-44 (MODE CONTROL, CHARACTOR GENERATOR), FK-47 (FUNCTION SWITCH), FA-2 (FOCUS SWITCH), LI-33 (LITHIUM BATTERY HOLDER), FP-376 (REMOTE COM

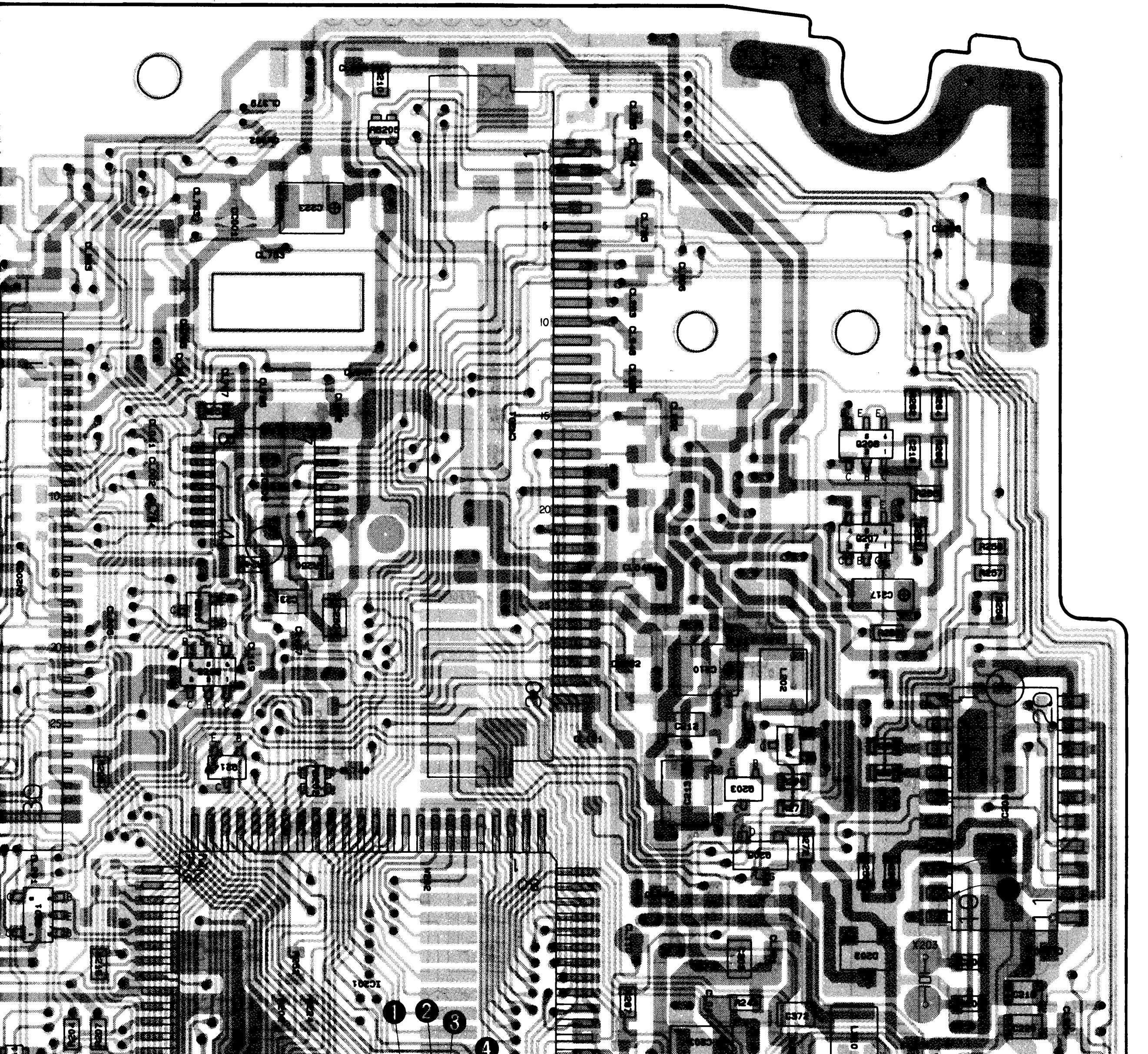
—Ref. No. FD-44 BOARD : 4000 series, FK-47, FA-2, LI-33, FP-376 BOARDS : 5000 series—


FD-44 BOARD (COMPONENT SIDE)
FD-44 BOARD (CONDUCTOR
A
B
C
D
E
F
G
H
I
J
K
L
1
2
3
4
5
6
7
8
9
10
11
04
CONTROL
UP
DOWN
TIME(NEXT)
DATE(+)
PROGRAM AE
EXPOSURE
FADER
CN202
RV302
SHUTTER SPEED
TH300
D202
RV301
AUTO LOCK
D301
ZERO MEM
COUNTER RESET
SUPERIMPOSE TITLE
SUPERIMPOSE TITLE 2
MEMORY
COLOR/MODE
CN204

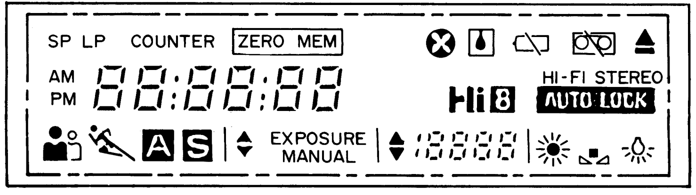
4-20	FMA2	Q311	8-729-905-35	2SC4081-R
5-18	DTC144EU	Q312	8-729-905-35	2SC4081-R
5-24	2SA1576-S	Q313	8-729-905-18	DTC144EU
5-15	DTC144WU	Q314	8-729-905-35	2SC4081-R
9-44	2SK94	Q315	8-729-905-18	DTC144EU
2-78	XN6401	Q317	8-729-905-24	2SA1576-S
2-19	XN6501	Q318	8-729-905-24	2SA1576-S
2-78	XN6401	Q319	8-729-905-35	2SC4081-R
3-10	XN6215			
5-XX	DTC114TU			
0-66	2SC1623			
5-XX	DTC114TU			
5-18	DTC144EU			
5-12	DTA144EU			
5-91	DTC115EU			

R), FP-376 (REMOTE COMMAND RECIEVER, REC SWITCH) PRINTED WIRING BOARDS

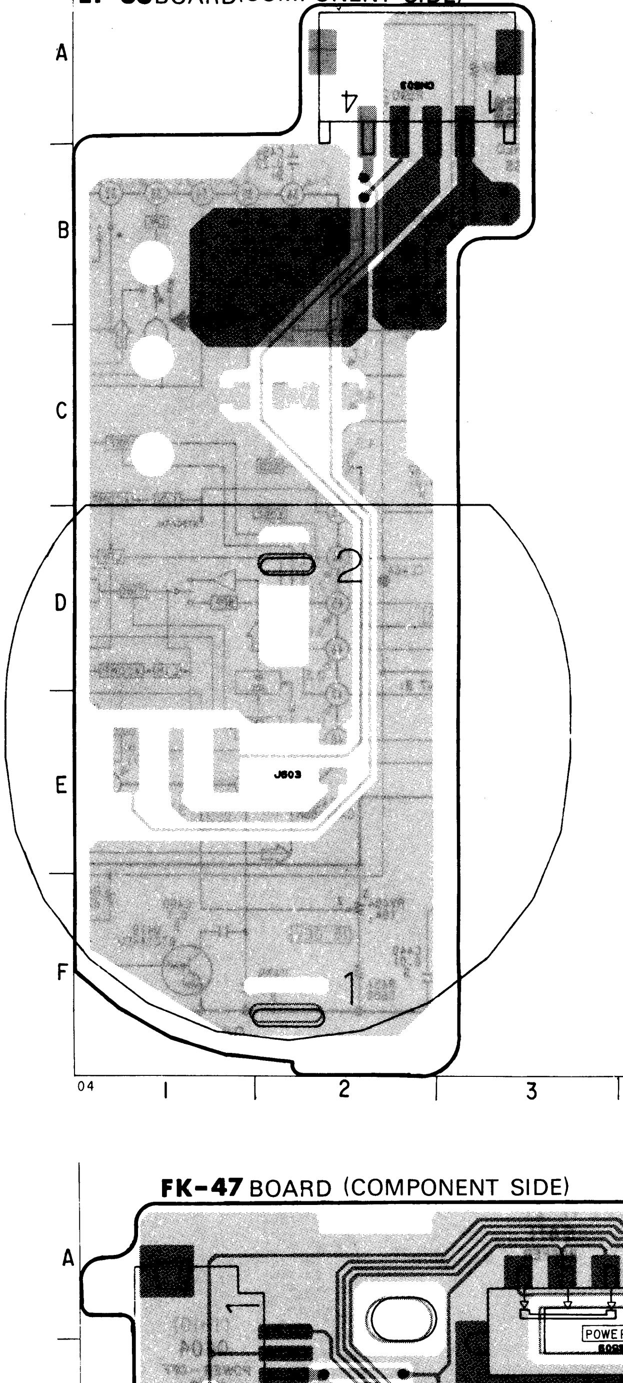
-44 BOARD (CONDUCTOR SIDE)


11
12
13
14
15
16
17
1-639-020-
22

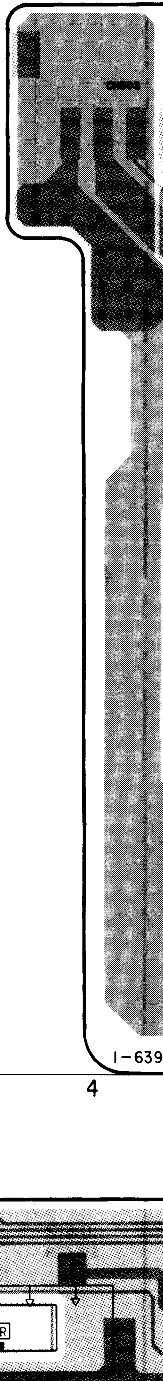
ND201


SP LP
COUNTER
ZERO MEM
AM
PM
HI-FI STEREO
AUTO LOCK
A
S
EXPOSURE
MANUAL

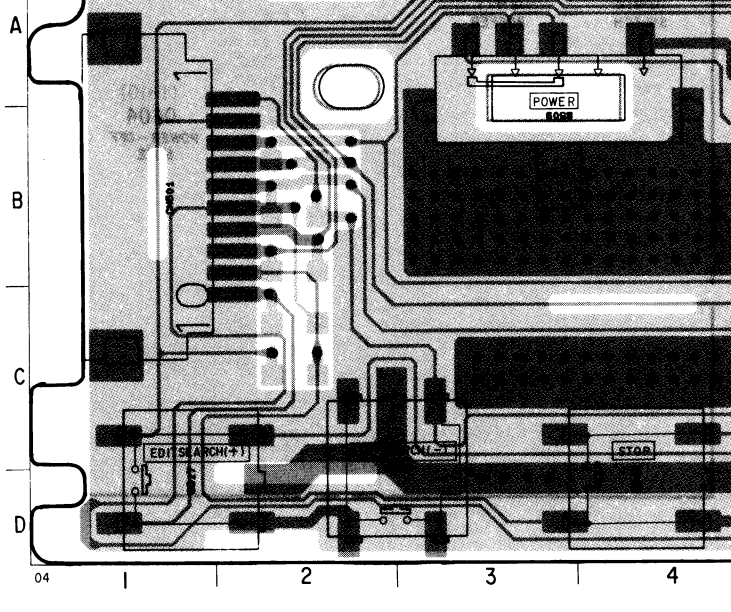
LI-33 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
04
1
2
3
4
CN603
J603

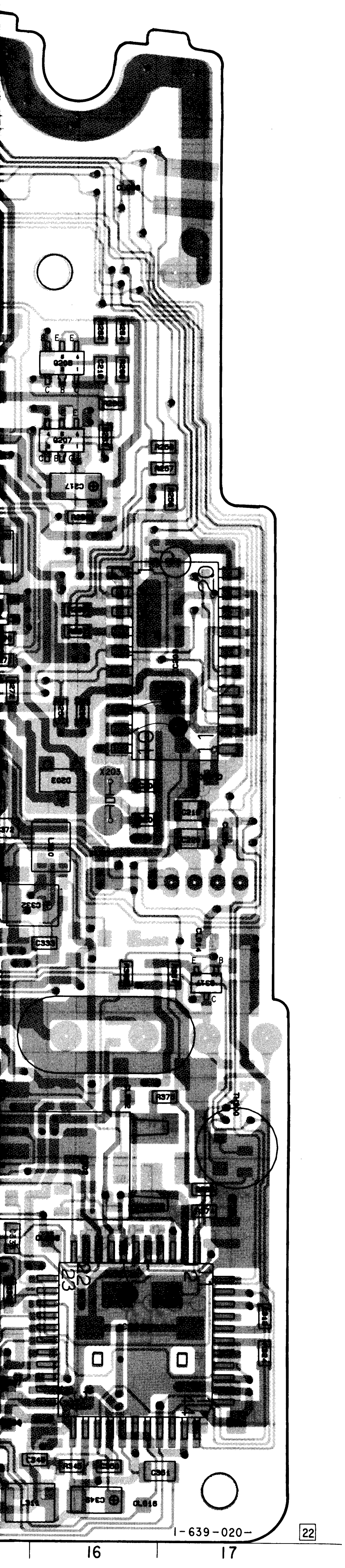
LI-33 BOAR



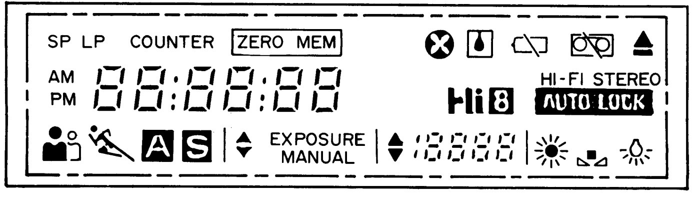
FK-47 BOARD (COMPONENT SIDE)


A
B
C
D
04
1
2
3
4
POWER
EDIT SEARCH(+)
STOP

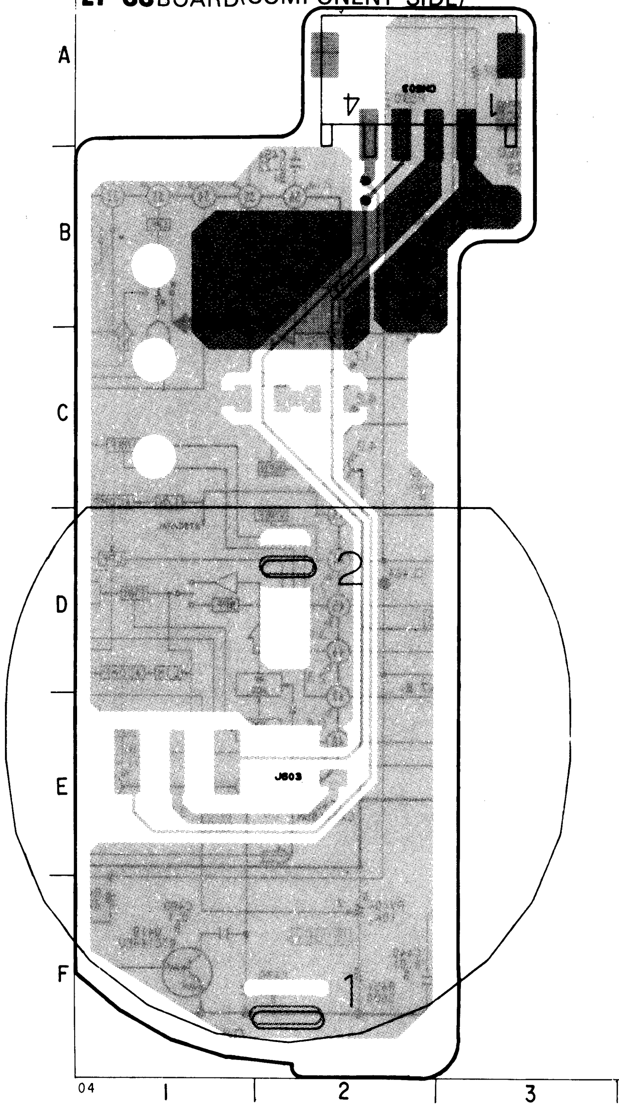
RDS


1-639-020-
22
16
17

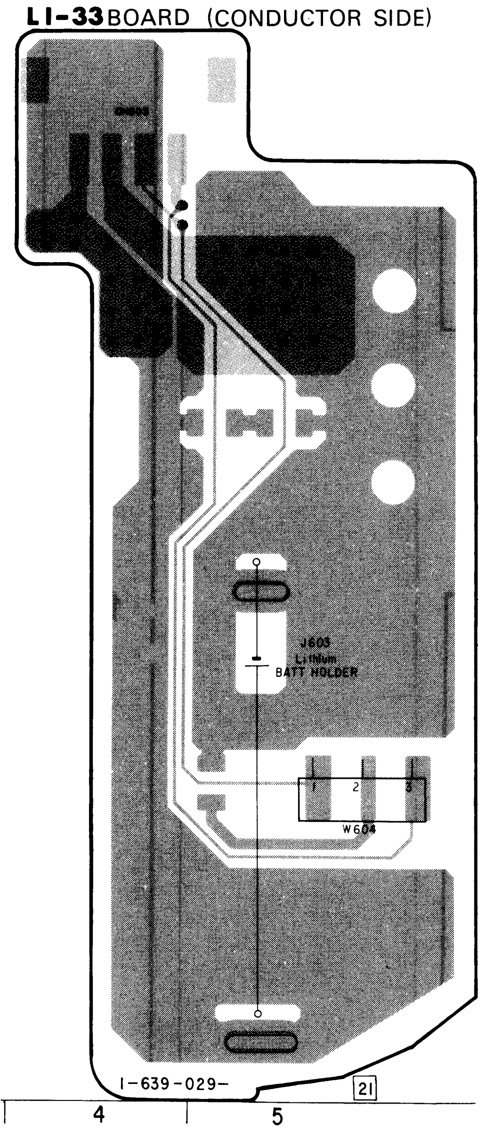
ND201


SP LP
COUNTER
ZERO MEM
AM
PM
88:88:88
Hi8
HI-FI STEREO
AUTO LOCK
A
S
EXPOSURE
MANUAL
8888

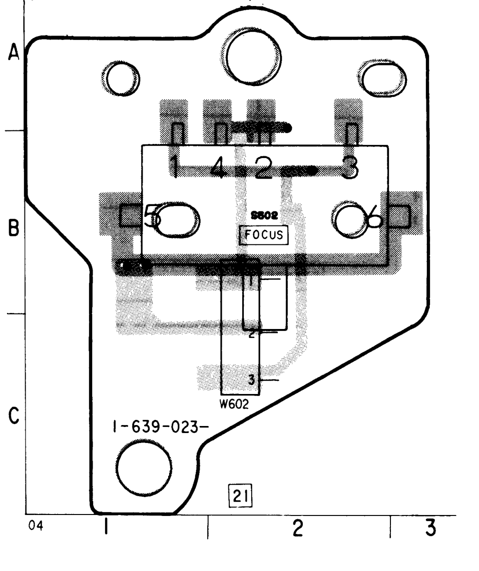
LI-33 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
4
1
2
1
J603
04
1
2
3

LI-33 BOARD (CONDUCTOR SIDE)

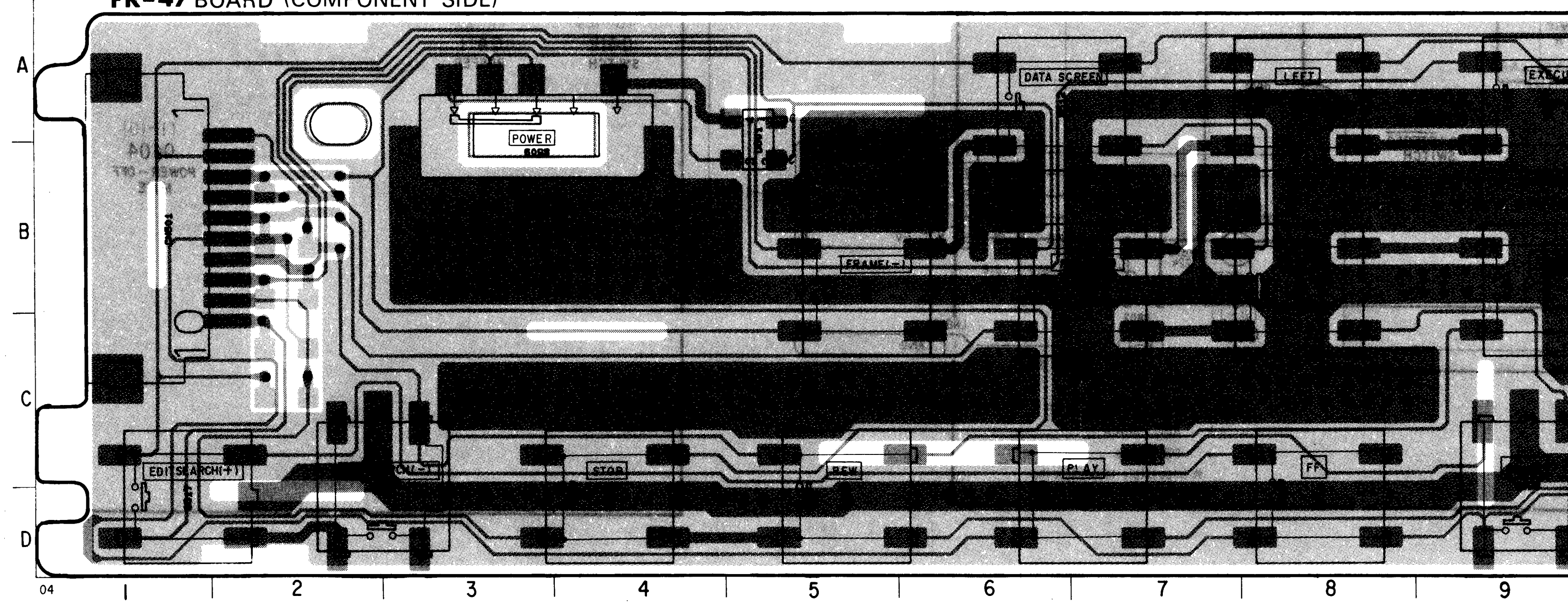

J603
Lithium
BATT HOLDER
1
2
3
W604
1-639-029-
21
4
5

FA-2 BOARD
(COMPONENT SIDE)

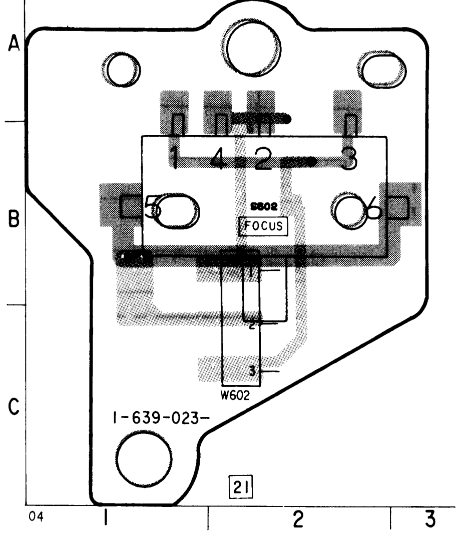

A
B
C
1
4
2
3
5
6
S602
FOCUS
W602
1-639-023-
21
04
1
2
3

< DIODE >
D501 8-719-

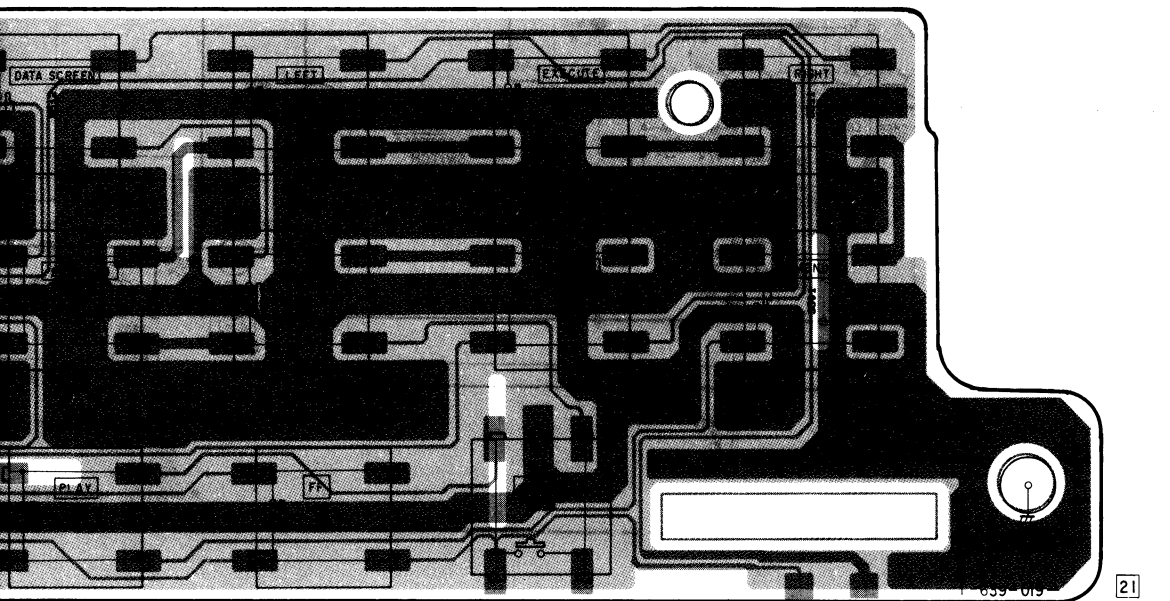
FK-47 BOARD (COMPONENT SIDE)


A
B
C
D
POWER
DATA SCREEN
LEFT
FRAME(-)
EDIT SEARCH(+)
STOP
REW
PLAY
FF
04
1
2
3
4
5
6
7
8
9

FA-2 BOARD
(COMPONENT SIDE)


A
B
C
1
4
2
3
5
6
S602
FOCUS
1
2
3
W602
1-639-023-
21
04
1
2
3

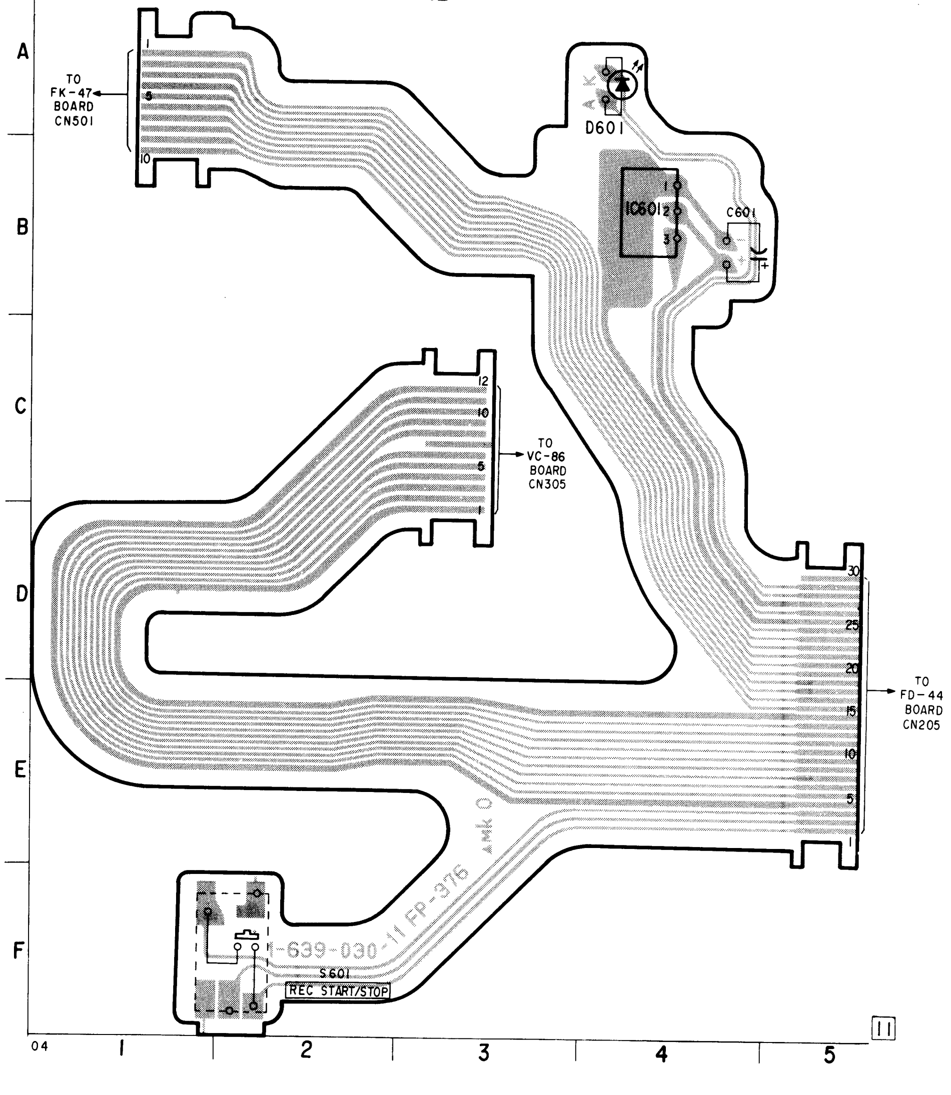
< DIODE >
D501 8-719-940-45 MA159


DATA SCREEN
LEFT
EXECUTE
RIGHT
PLAY
FF
21
7
8
9
10
11
12

< DIODE >
D601 8-719-812-41 TLR124, RED

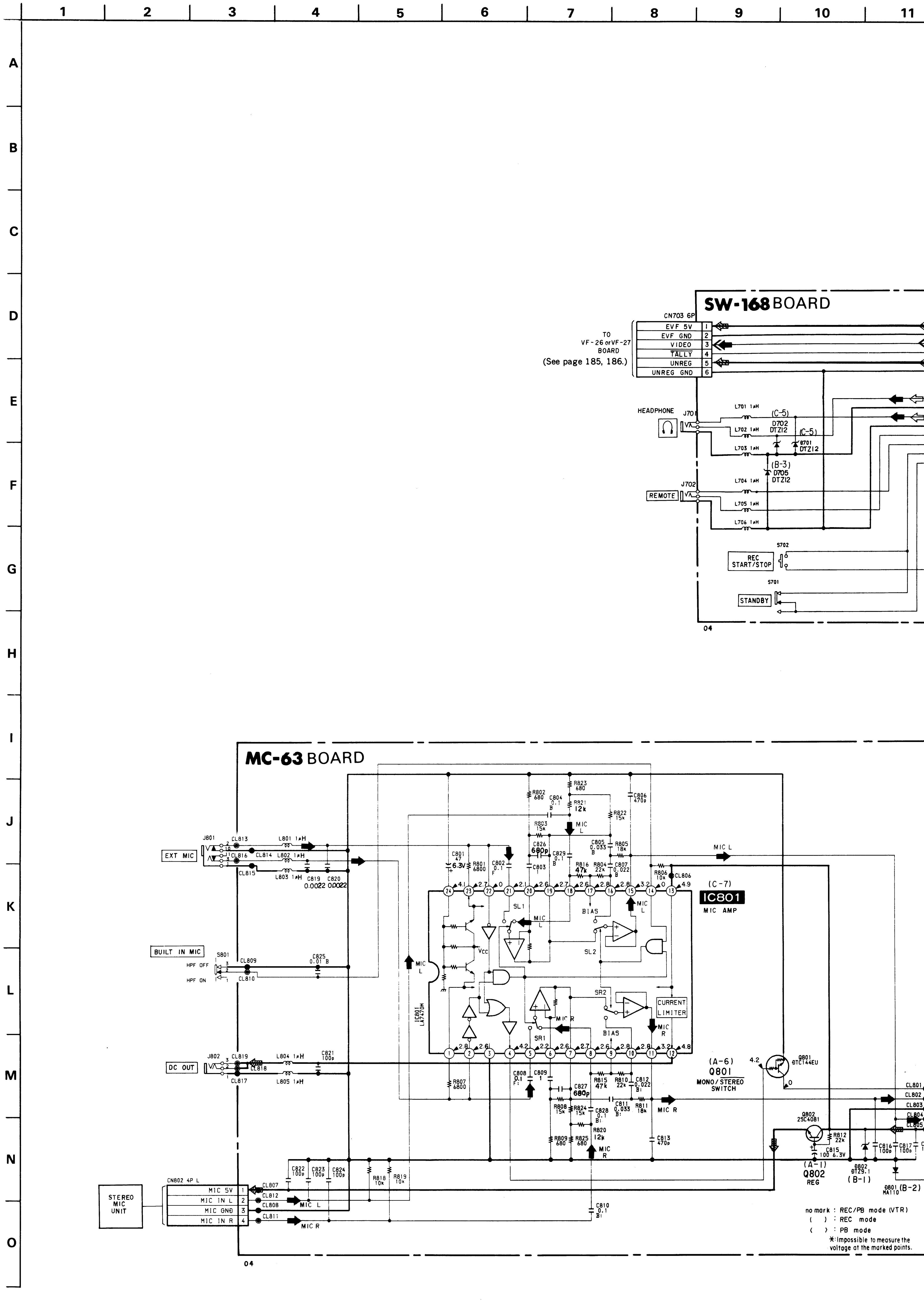
< IC >
IC601 8-741-100-63 SBX1619-51

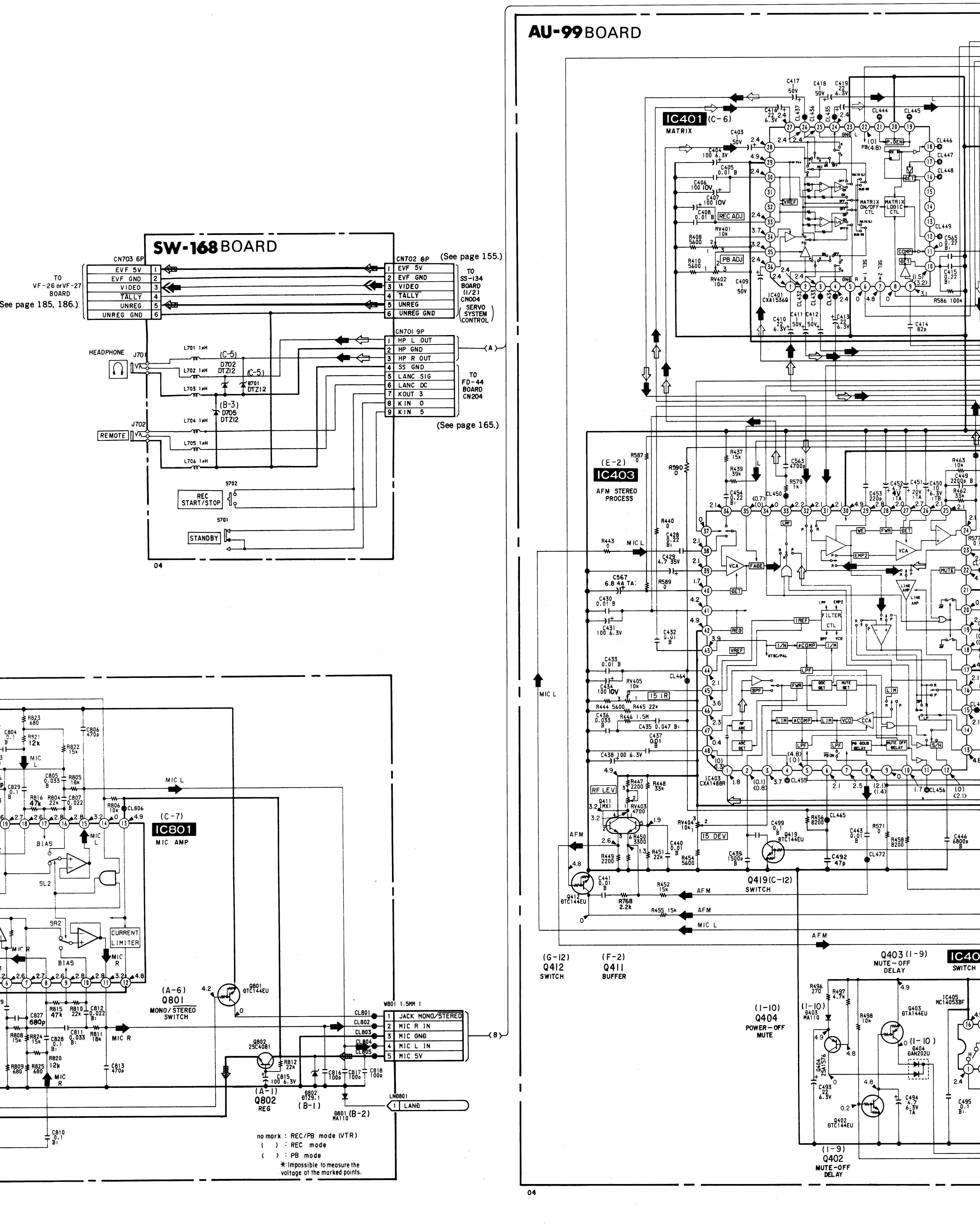
FP-376 FLEXIBLE BOARD


A
B
C
D
E
F
TO FK-47 BOARD CN501
1
5
10
D601
A
K
IC601
1
2
3
C601
12
10
5
1
TO VC-86 BOARD CN305
30
25
20
15
10
5
TO FD-44 BOARD CN205
1-639-030-11 FP-376
S601
REC START/STOP
11
04
1
2
3
4
5

AU-99 (AUDIO PROCESS), MC-63 (MIC AMP), SW-168 (CAMERA REC SWITCH) SCHEMATIC DIAGRAM

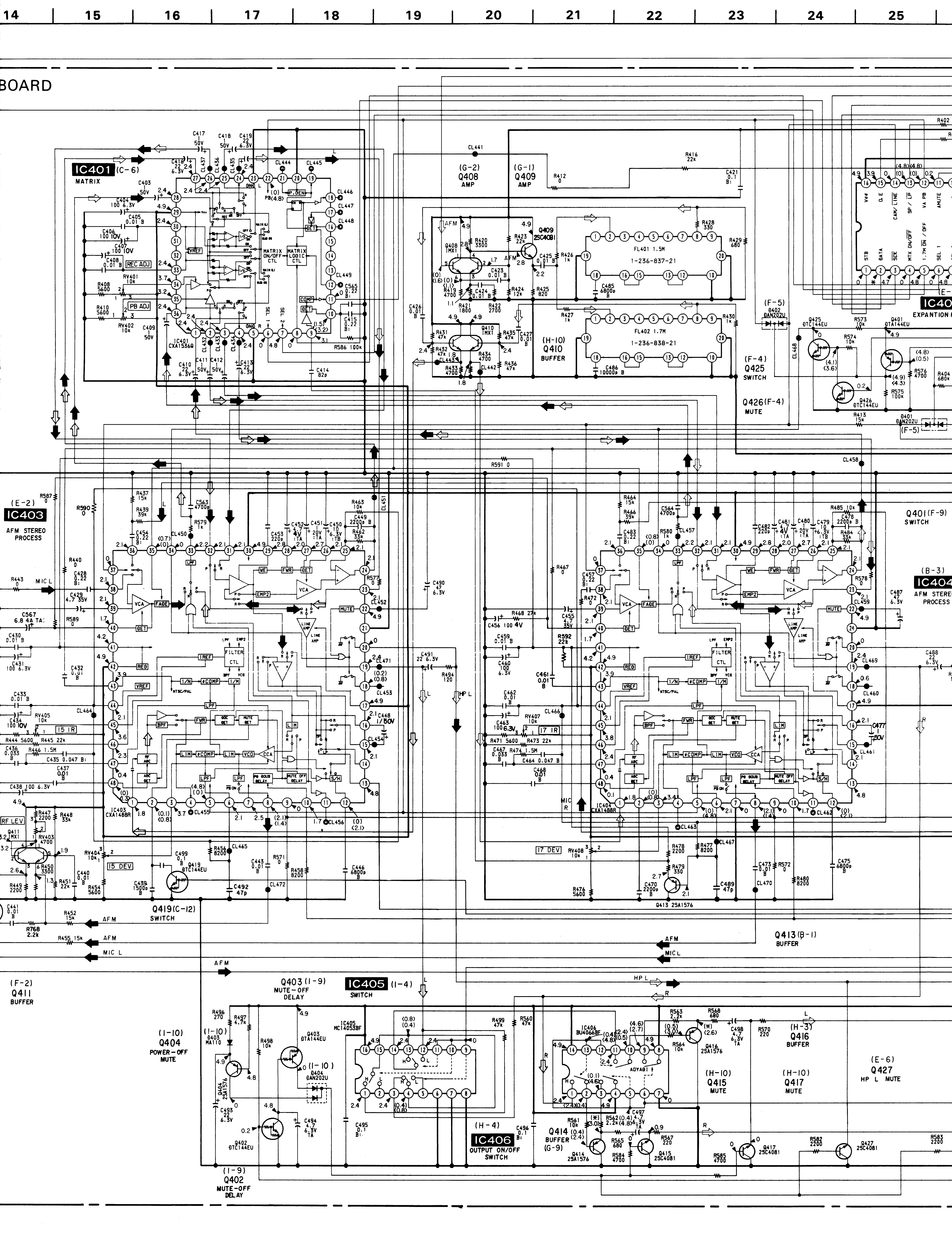
—Ref. No. AU-99, MC-63, SW-168 BOARDS : 6000 series—

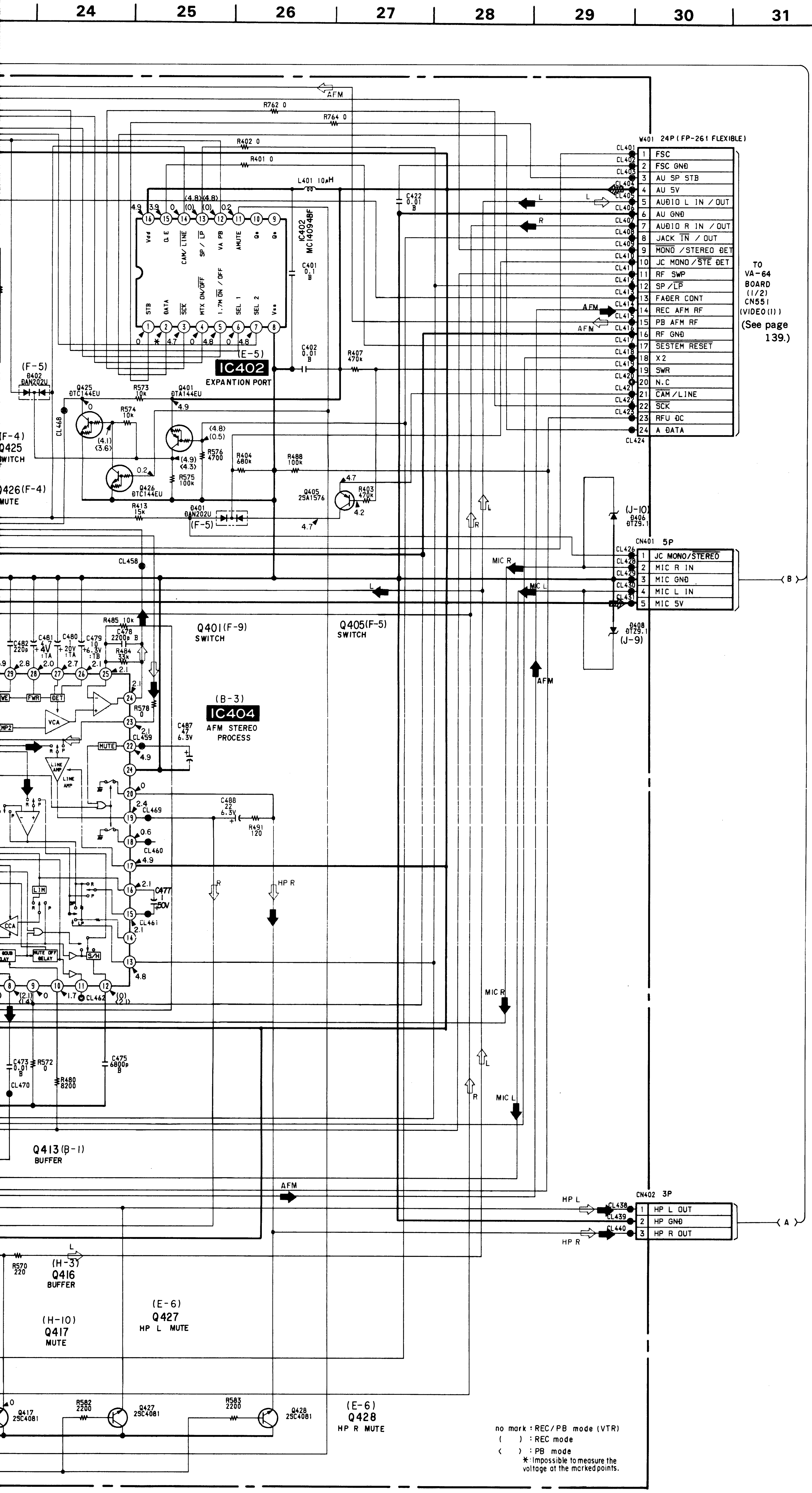

1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
SW-168 BOARD
CN703 6P
EVF 5V
EVF GND
VIDEO
TALLY
UNREG
UNREG GND
TO VF-26 or VF-27 BOARD
(See page 185, 186.)
HEADPHONE
J701
L701 1µH
L702 1µH
L703 1µH
(C-5) D702 DTZ12
(C-5) D701 DTZ12
(B-3) D705 DTZ12
REMOTE
J702
L704 1µH
L705 1µH
L706 1µH
S702
REC START/STOP
S701
STANDBY
04
MC-63 BOARD
J801
EXT MIC
CL813
CL816
CL814
CL815
L801 1µH
L802 1µH
L803 1µH
C819 0.0022
C820 0.0022
BUILT IN MIC
S801
HPF OFF
HPF ON
CL809
CL810
C825 0.01 B
J802
DC OUT
CL819
CL818
CL817
L804 1µH
L805 1µH
C821 100p
STEREO MIC UNIT
CN802 4P L
MIC 5V
MIC IN L
MIC GND
MIC IN R
CL807
CL812
CL808
CL811
MIC L
MIC R
C822 100p
C823 100p
C824 100p
R818 10k
R819 10k
R802 680
C804 0.1 B
R823 680
R821 12k
R822 15k
C806 470p
R803 15k
C826 680p
C829 0.1 B
C803 1
C801 47 6.3V
R801 6800
C802 0.1 F
C805 0.033 B
R805 18k
R816 47k
R804 22k
C807 0.022 B
R806 10k
CL806
MIC L
(C-7)
IC801
MIC AMP
IC801 LA7470M
SL1
SL2
BIAS
Vcc
SR1
SR2
CURRENT LIMITER
MIC R
C808 0.1 F
C809 1
C827 680p
R815 47k
R810 22k
C812 0.022 B
R808 15k
R824 15k
C828 0.1 B
C811 0.033 B
R811 18k
R820 12k
R809 680
R825 680
C813 470p
R807 6800
C810 0.1 B
(A-6)
Q801
MONO/STEREO SWITCH
Q801 DTC144EU
Q802 2SC4081
R812 22k
C815 100 6.3V
(A-1)
Q802
REG
D802 DTZ9.1
(B-1)
C816 100p
C817 100p
D801 MA110
(B-2)
CL801
CL802
CL803
CL804
CL805
no mark : REC/PB mode (VTR)
( ) : REC mode
( ) : PB mode
*: Impossible to measure the voltage at the marked points.
04


AU-99 BOARD
IC401 (C-6)
MATRIX
IC401 CXA1536Q
REC ADJ
PB ADJ
VREF
MATRIX ON/OFF CTL
MATRIX LOGIC CTL
P.GEN
DET
COMP
SEL 1
SEL 2
R586 100k
IC403 (E-2)
AFM STEREO PROCESS
IC403 CXA1468R
MIC L
VCA
FADE
DET
REG
VREF
FILTER CTL
IREF
WE
FWR
EMP2
MUTE
LINE AMP
15 IR
15 DEV
RF LEV
LPF
BPF
LIM
VCO
CCA
S/H
MUTE OFF DELAY
AFM
Q419 (C-12)
SWITCH
(G-12)
Q412
SWITCH
(F-2)
Q411
BUFFER
Q403 (I-9)
MUTE-OFF DELAY
IC405
SWITCH
IC405 MC14053BF
(I-10)
Q404
POWER-OFF MUTE
(I-9)
Q402
MUTE-OFF DELAY
SW-168 BOARD
CN703 6P
CN702 6P
(See page 155.)
EVF 5V
EVF GND
VIDEO
TALLY
UNREG
UNREG GND
TO VF-26 or VF-27 BOARD
(See page 185, 186.)
TO SS-134 BOARD (1/2) CN004
(SERVO SYSTEM CONTROL)
CN701 9P
HP L OUT
HP GND
HP R OUT
SS GND
LANC SIG
LANC DC
KOUT 3
KIN 0
KIN 5
TO FD-44 BOARD CN204
(See page 165.)
HEADPHONE
J701
J702
REMOTE
D702 DTZ12
D701 DTZ12
D705 DTZ12
S702
REC START/STOP
S701
STANDBY
(C-7)
IC801
MIC AMP
BIAS
SL2
SR2
CURRENT LIMITER
MIC L
MIC R
(A-6)
Q801
MONO/STEREO SWITCH
Q801 DTC144EU
Q802 2SC4081
(A-1)
Q802
REG
D802 DTZ9.1
(B-1)
D801 MA110 (B-2)
W801 1.5MM 1
JACK MONO/STEREO
MIC R IN
MIC GND
MIC L IN
MIC 5V
LN0801
LAND
04

no mark : REC/PB mode (VTR)
( ) : REC mode
( ) : PB mode
✱:Impossible to measure the voltage at the marked points.

BOARD


14
15
16
17
18
19
20
21
22
23
24
25
IC401 (C-6)
MATRIX
IC401 CXA1536Q
REC ADJ
PB ADJ
VREF
MATRIX ON/OFF CTL
MATRIX LOGIC CTL
P.DEN
DET
COMP
SEL 1
SEL 2
R586 100k
(G-2) Q408 AMP
(G-1) Q409 AMP
Q409 2SC4081
Q408 IMX1
Q410 IMX1
(H-10) Q410 BUFFER
FL401 1.5M
1-236-837-21
FL402 1.7M
1-236-838-21
R416 22k
R412 0
(F-5) D402 DAN202U
(F-4) Q425 SWITCH
Q426 (F-4) MUTE
Q425 DTC144EU
Q401 DTA144EU
Q426 DTC144EU
D401 DAN202U
IC40
EXPANTION
Vdd
STB
DATA
SCK
MTX ON/OFF
SEL 1
CAM/LINE
SP/LP
VA PB
(E-2) IC403
AFM STEREO PROCESS
IC403 CXA1488R
(B-3) IC404
AFM STEREO PROCESS
IC404 CXA1488R
Q401 (F-9) SWITCH
VCA
FADE
DET
IREF
FILTER CTL
VREF
REG
LPF
BPF
FWR
WE
EMP2
MUTE
LINE AMP
LIM
#COMP
VCO
CCA
S/H
PB GOUS DELAY
MUTE OFF DELAY
ANC DET
NTSC/PAL
15 IR
17 IR
15 DEV
17 DEV
RF LEV
MIC L
MIC R
AFM
HP L
L
R
Q411 IMX1
(F-2) Q411 BUFFER
Q419 DTC144EU
Q419 (C-12) SWITCH
Q413 2SA1576
Q413 (B-1) BUFFER
R591 0
(I-10) Q404 POWER-OFF MUTE
(I-10) D403 MA110
Q404 2SA1576
Q403 (I-9) MUTE-OFF DELAY
Q403 DTA144EU
(I-10) D404 DAN202U
(I-9) Q402 MUTE-OFF DELAY
Q402 DTC144EU
IC405 (I-4) SWITCH
IC405 MC14053BF
(H-4) IC406 OUTPUT ON/OFF SWITCH
IC406 BU4066BF
ADYA01
Q414 BUFFER (G-9)
Q414 2SA1576
Q415 2SC4081
(H-10) Q415 MUTE
(H-10) Q417 MUTE
Q417 2SC4081
(H-3) Q416 BUFFER
Q416 2SA1576
(E-6) Q427 HP L MUTE
Q427 2SC4081


24
25
26
27
28
29
30
31
32
AFM
R762 0
R764 0
R402 0
R401 0
L401 10μH
C422 0.01 B
IC402 MC14094BF
C401 0.1 B
Vdd
O.E
CAM/LINE
SP/LP
VA PB
AMUTE
STB
DATA
SCK
MTX ON/OFF
1.7M ON/OFF
SEL 1
SEL 2
Vss
(E-5)
IC402
EXPANTION PORT
C402 0.01 B
R407 470k
(F-5)
D402 DAN202U
Q425 DTC144EU
R573 10k
Q401 DTA144EU
R574 10k
CL468
(F-4)
Q425
SWITCH
Q426(F-4)
MUTE
R576 4700
R575 100k
Q426 DTC144EU
R404 680k
R488 100k
R413 15k
D401 DAN202U
(F-5)
Q405 2SA1576
R403 470k
W401 24P (FP-261 FLEXIBLE)
1 FSC
2 FSC GND
3 AU SP STB
4 AU 5V
5 AUDIO L IN / OUT
6 AU GND
7 AUDIO R IN / OUT
8 JACK IN / OUT
9 MONO / STEREO DET
10 JC MONO / STE DET
11 RF SWP
12 SP / LP
13 FADER CONT
14 REC AFM RF
15 PB AFM RF
16 RF GND
17 SESTEM RESET
18 X2
19 SWR
20 N.C
21 CAM / LINE
22 SCK
23 RFU DC
24 A DATA
TO VA-64 BOARD (1/2) CN551 (VIDEO(1))
(See page 139.)
(J-10) D406 DTZ9.1
CN401 5P
1 JC MONO/STEREO
2 MIC R IN
3 MIC GND
4 MIC L IN
5 MIC 5V
D408 DTZ9.1 (J-9)
MIC R
MIC L
CL458
R485 10k
C478 2200p B
R484 33k
Q401(F-9)
SWITCH
Q405(F-5)
SWITCH
(B-3)
IC404
AFM STEREO PROCESS
R578 0
C487 47 6.3V
CL459
MUTE
VCA
LINE AMP
C488 22 6.3V
R491 120
CL469
CL460
C477 1 50V
CL461
S/H
MUTE OFF DELAY
CL462
C473 0.01 B
R572 0
CL470
R480 8200
C475 6800p B
Q413(B-1)
BUFFER
AFM
HP L
HP R
CN402 3P
1 HP L OUT
2 HP GND
3 HP R OUT
(A)
(B)
R570 220
(H-3)
Q416
BUFFER
(E-6)
Q427
HP L MUTE
(H-10)
Q417
MUTE
Q417 2SC4081
R582 2200
Q427 2SC4081
R583 2200
Q428 2SC4081
(E-6)
Q428
HP R MUTE

no mark : REC/PB mode (VTR)
( ) : REC mode
〈 〉 : PB mode
✱ : Impossible to measure the voltage at the marked points.

• Signal path

	AUDIO Signal
REC	➡
PB	⇨

Signal path

	REC	REC/PB	PB
Ref. signal	➤	➢	▷

AUDIO AUDIO

AU-99 (AUDIO PROCESS), MC-63 (MIC AMP), SW-168 (CAMERA REC SWITCH) PRINTED WIRING BOARDS

—Ref. No. AU-99, MC-63, SW-168 BOARDS : 6000 series—

< DIODE >

D401	8-719-941-86	DAN202U
D402	8-719-941-86	DAN202U
D403	8-719-404-46	MA110
D404	8-719-941-86	DAN202U
D406	8-719-977-22	DTZ9.1

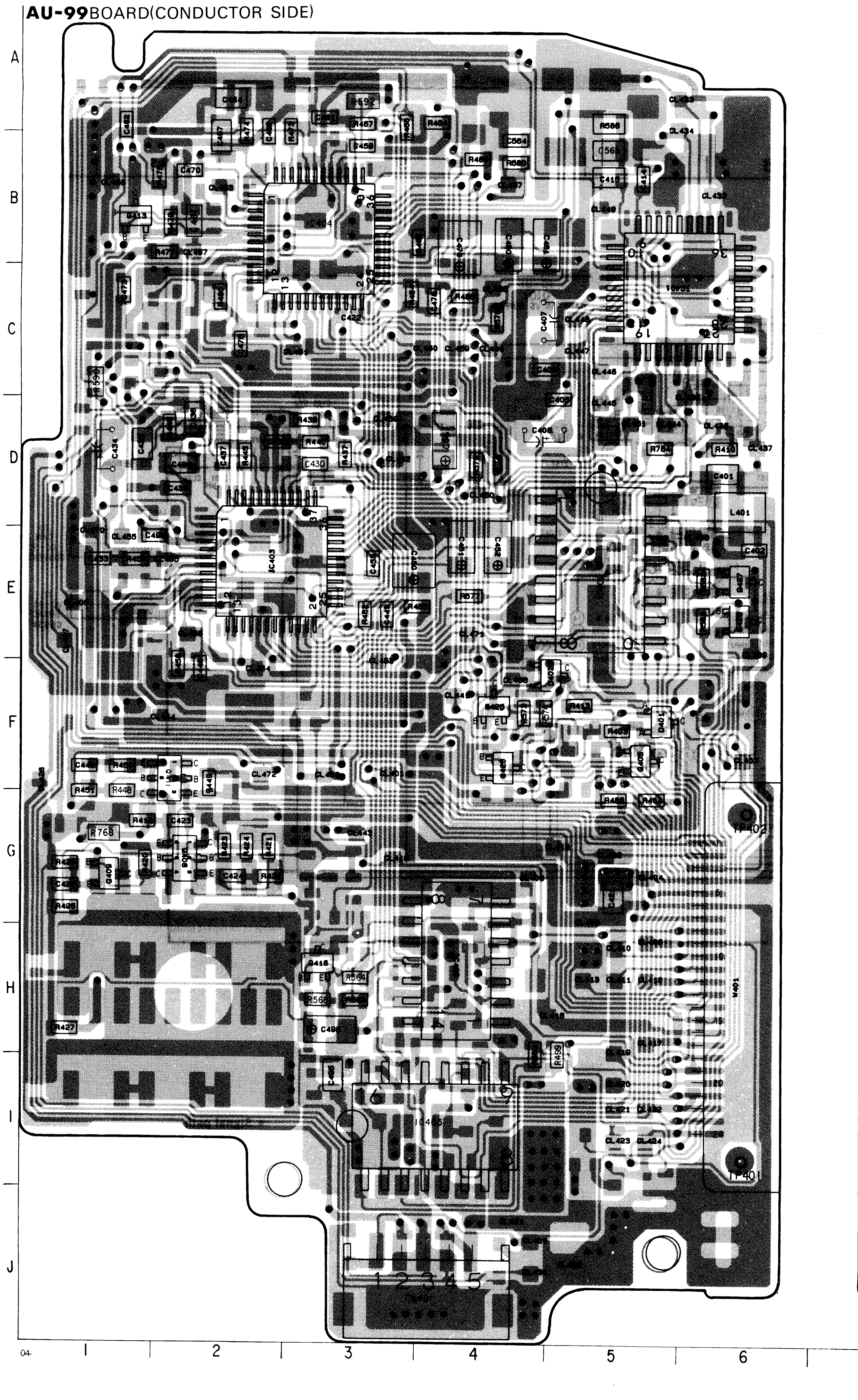
< IC >

IC401	8-759-823-21	CXA-1536Q
IC402	8-759-009-22	MC14094BF
IC403	8-759-823-19	CXA-1488R
IC404	8-759-823-19	CXA-1488R
IC405	8-759-300-71	HD14053BF
IC406	8-759-008-67	MC14066BF

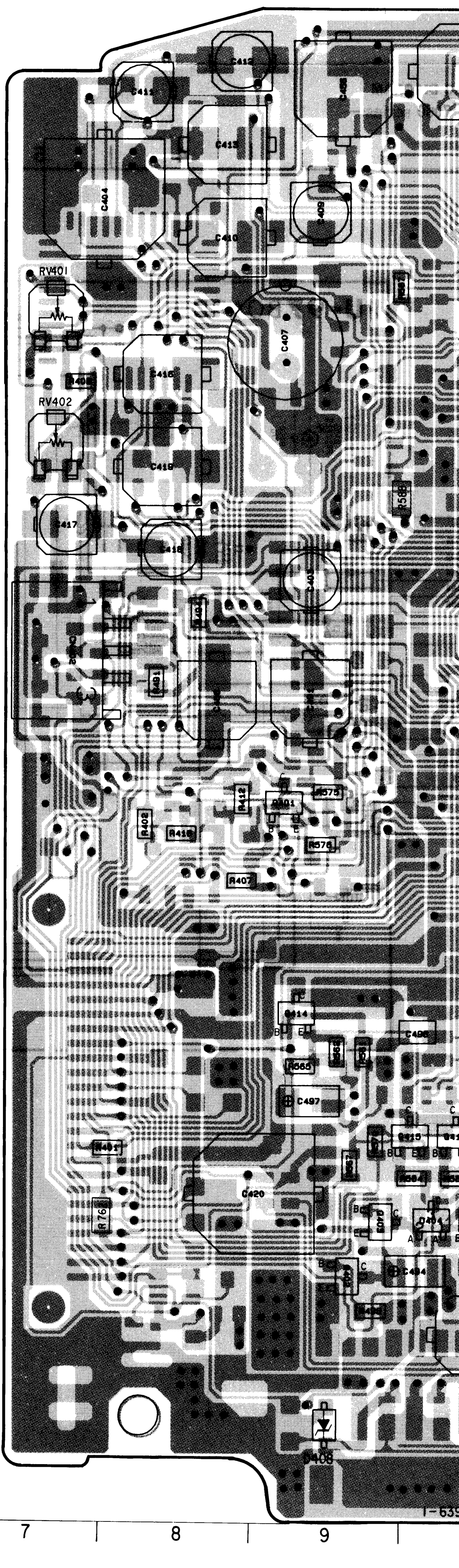
< TRANSISTOR >

Q401	8-729-905-12	DTA144EU
Q402	8-729-905-18	DTC144EU
Q403	8-729-905-12	DTA144EU
Q404	8-729-905-23	2SA1576-R
Q405	8-729-905-23	2SA1576-R
Q408	8-729-907-26	IMX1
Q409	8-729-905-35	2SC4081-R
Q410	8-729-907-26	IMX1
Q411	8-729-907-26	IMX1
Q412	8-729-905-18	DTC144EU
Q413	8-729-905-23	2SA1576-R
Q414	8-729-905-23	2SA1576-R
Q415	8-729-905-35	2SC4081-R
Q416	8-729-905-23	2SA1576-R
Q417	8-729-905-35	2SC4081-R
Q419	8-729-905-18	DTC144EU
Q425	8-729-905-18	DTC144EU
Q426	8-729-905-18	DTC144EU
Q427	8-729-905-35	2SC4081-R
Q428	8-729-905-35	2SC4081-R

AU-99BOARD(CONDUCTOR SIDE)

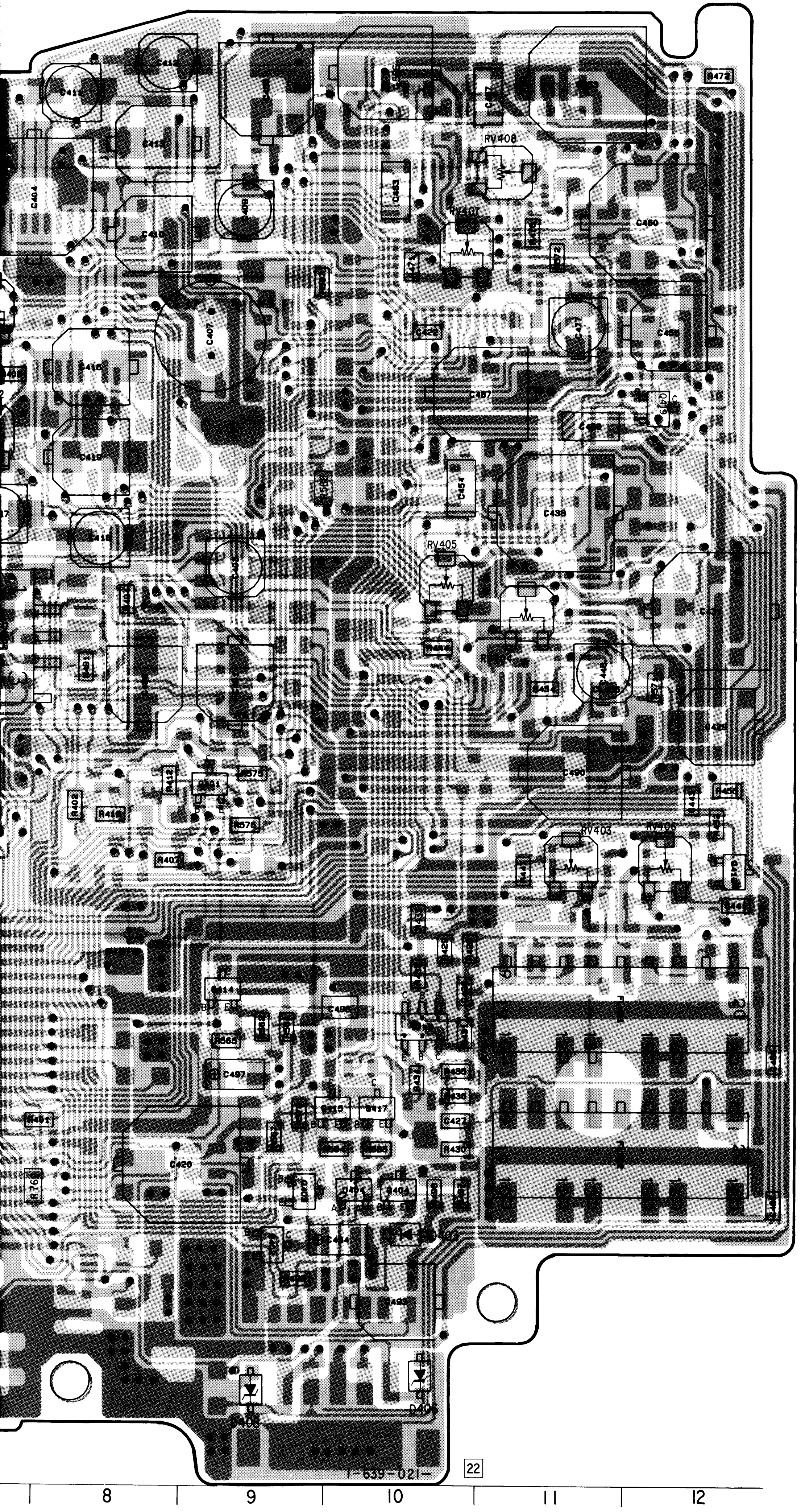

A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
IC403
IC405
L401
TP401
TP402
R427
R768
C430
C434
C407
1 2 3 4 5
04

AU-99BOARD(COMPONENT SIDE)

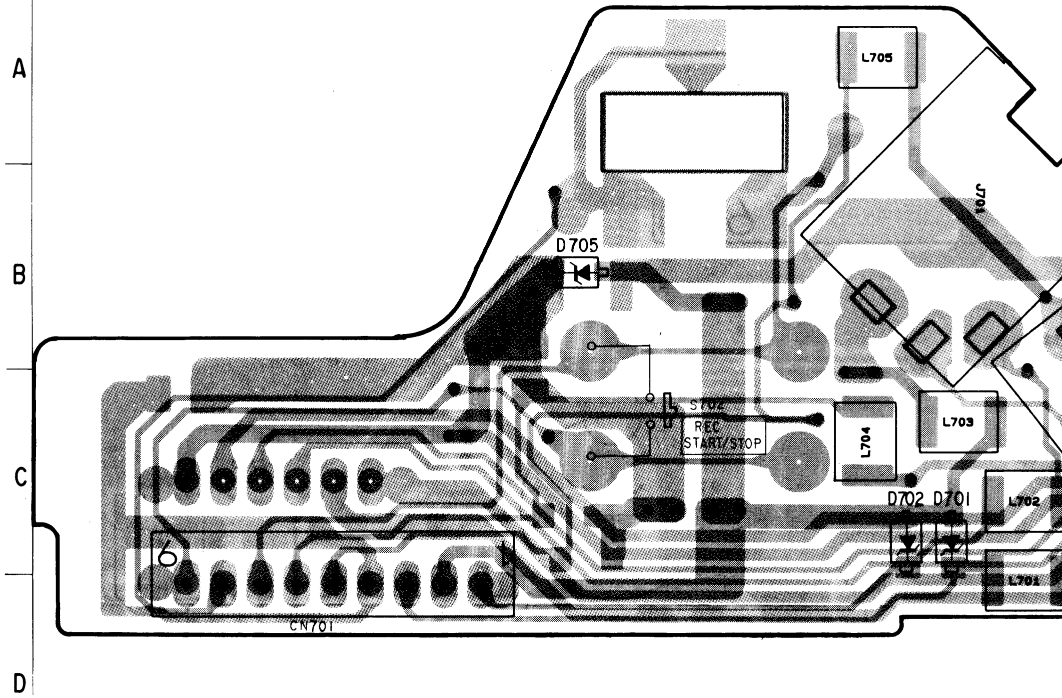

RV401
RV402
C404
C407
Q413
Q415
Q416
Q417
Q414
C497
R565
R407
R416
D406
7
8
9

Q413	8-729-905-23	2SA1576-R
Q414	8-729-905-23	2SA1576-R
Q415	8-729-905-35	2SC4081-R
Q416	8-729-905-23	2SA1576-R
Q417	8-729-905-35	2SC4081-R
Q419	8-729-905-18	DTC144EU
Q425	8-729-905-18	DTC144EU
Q426	8-729-905-18	DTC144EU
Q427	8-729-905-35	2SC4081-R
Q428	8-729-905-35	2SC4081-R

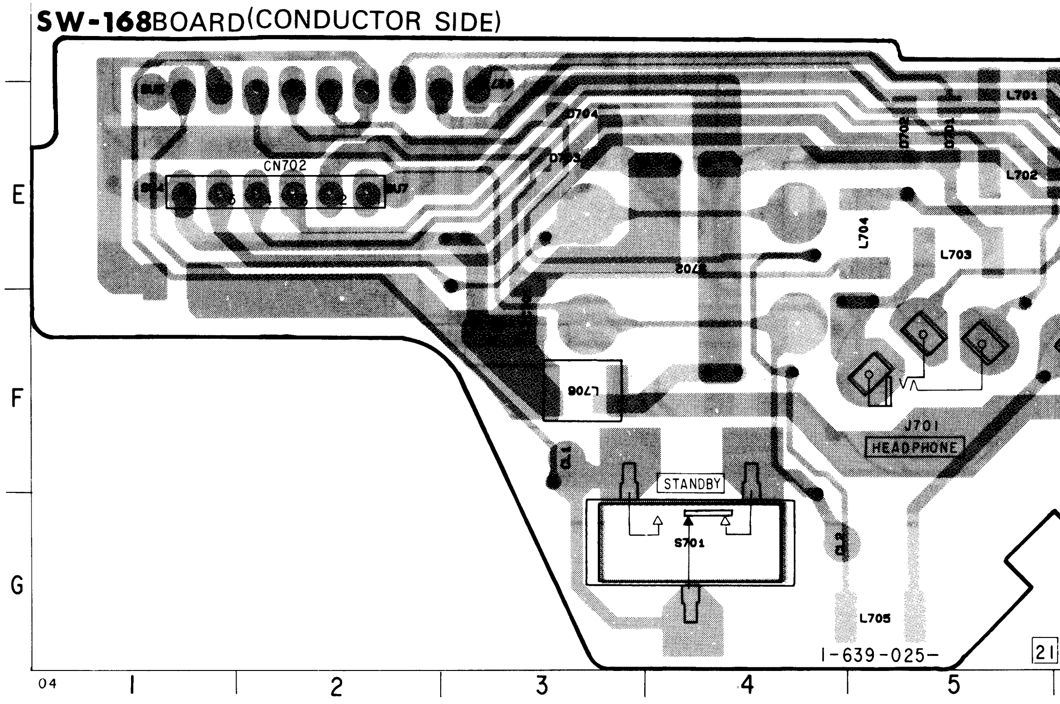
9BOARD(COMPONENT SIDE)


Q412
Q411
Q413
C404
Q409
C440
C407
Q416
Q418
Q415
Q407
RV408
RV407
C483
C450
C428
C477
C455
C457
C438
C454
RV405
RV404
C490
RV403
RV406
Q414
C497
C420
C495
Q408
D406
D407
R472
1-639-021-
22
8
9
10
11
12

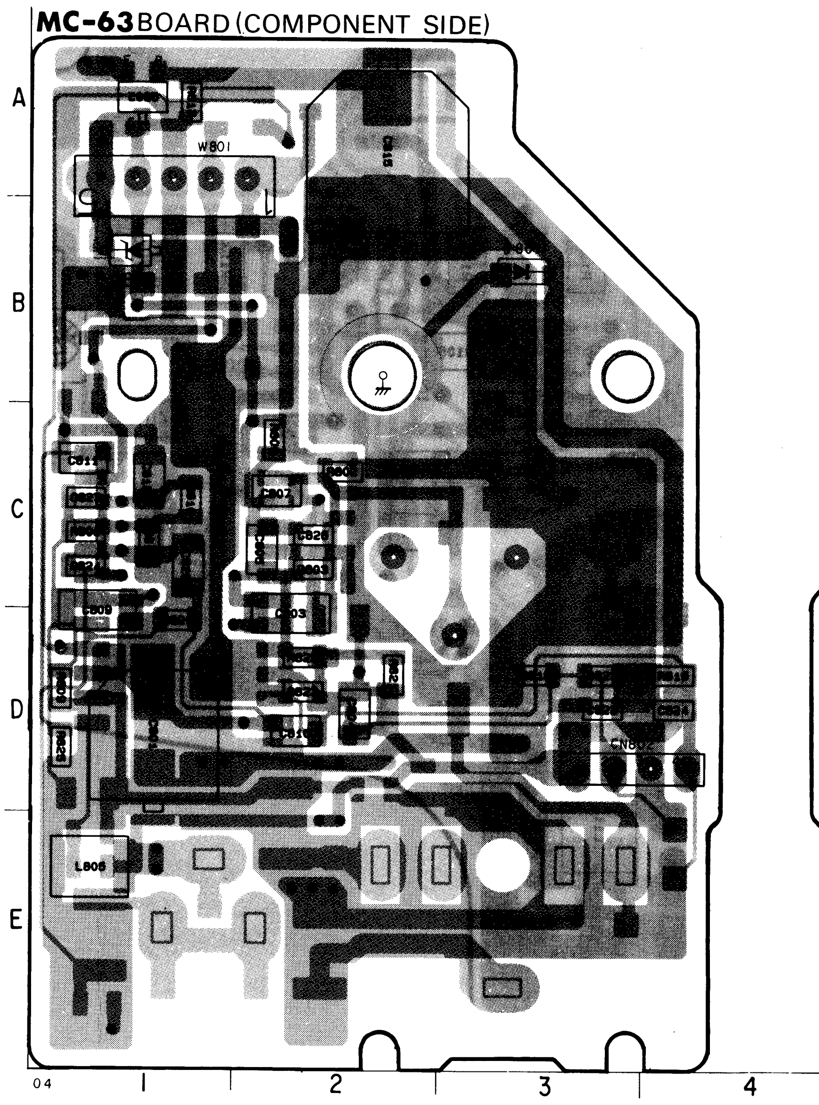
SW-168BOARD(COMPONENT SIDE)


A
B
C
D
L705
D705
J701
S702
REC
START/STOP
L704
L703
D702
D701
L702
L701
CN701

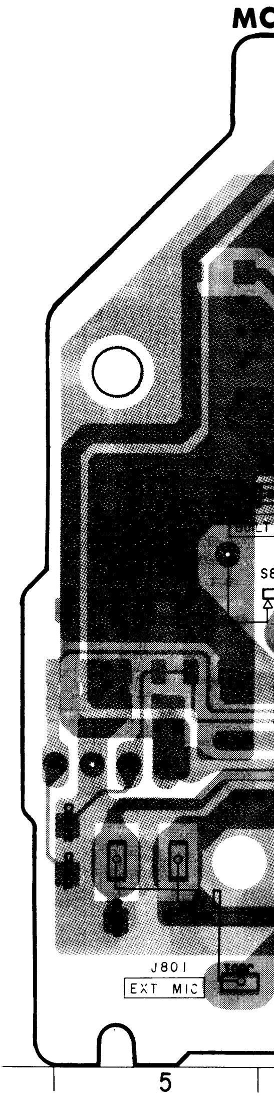
SW-168BOARD(CONDUCTOR SIDE)

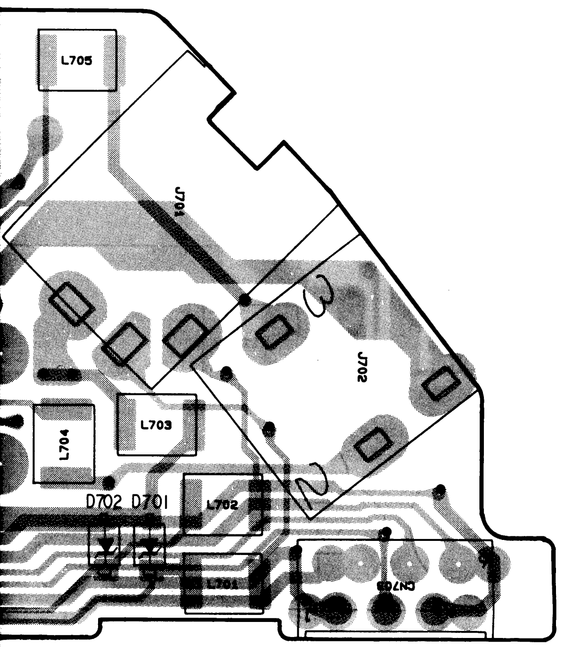

E
F
G
CN702
D704
D703
L701
L702
L704
L703
S702
L706
J701
HEADPHONE
STANDBY
S701
L705
1-639-025-
21
04
1
2
3
4
5

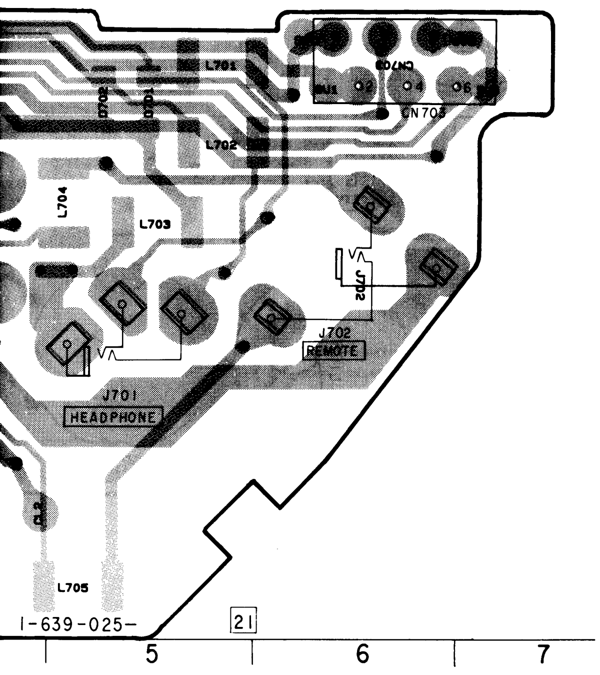
MC-63BOARD(COMPONENT SIDE)


A
B
C
D
E
W801
C911
C907
C903
L805
CN802
04
1
2
3
4

MC


J801
EXT MIC
5

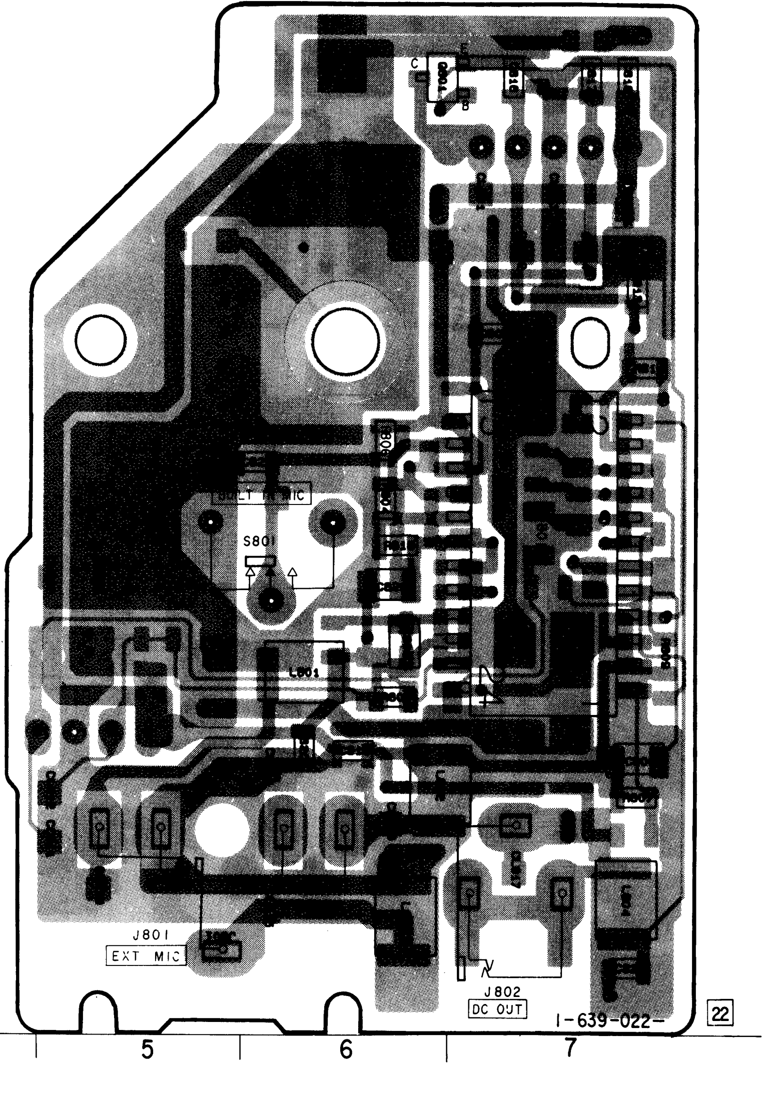

L705
J701
J702
L703
L704
D702 D701
L702
L701
CN703


L701
CN703
CN703
L702
D702
D701
L704
L703
J702
J702
REMOTE
J701
HEADPHONE
L705
1-639-025-
21
5
6
7

< DIODE >

D701	8-719-977-34	DTZ12
D702	8-719-977-34	DTZ12
D705	8-719-977-34	DTZ12

MC-63BOARD(CONDUCTOR SIDE)


C
B
S801
L801
J801
EXT MIC
J802
DC OUT
1-639-022-
22
5
6
7

< DIODE >

D801	8-719-404-46	MA110
D802	8-719-977-22	DTZ9.1

< IC >

IC801	8-759-823-42	LA7470M

< TRANSISTOR >

Q801	8-729-905-18	DTC144EU
Q802	8-729-905-35	2SC4081-R

FU-97 (POWER) PRINTED WIRING BOARD

—Ref. No. FU-97 BOARD : 7000 series—

< DIODE >

D101	8-719-981-59	FC805
D102	8-719-981-56	SB05W05C-P
D103	8-719-922-21	AR2222S

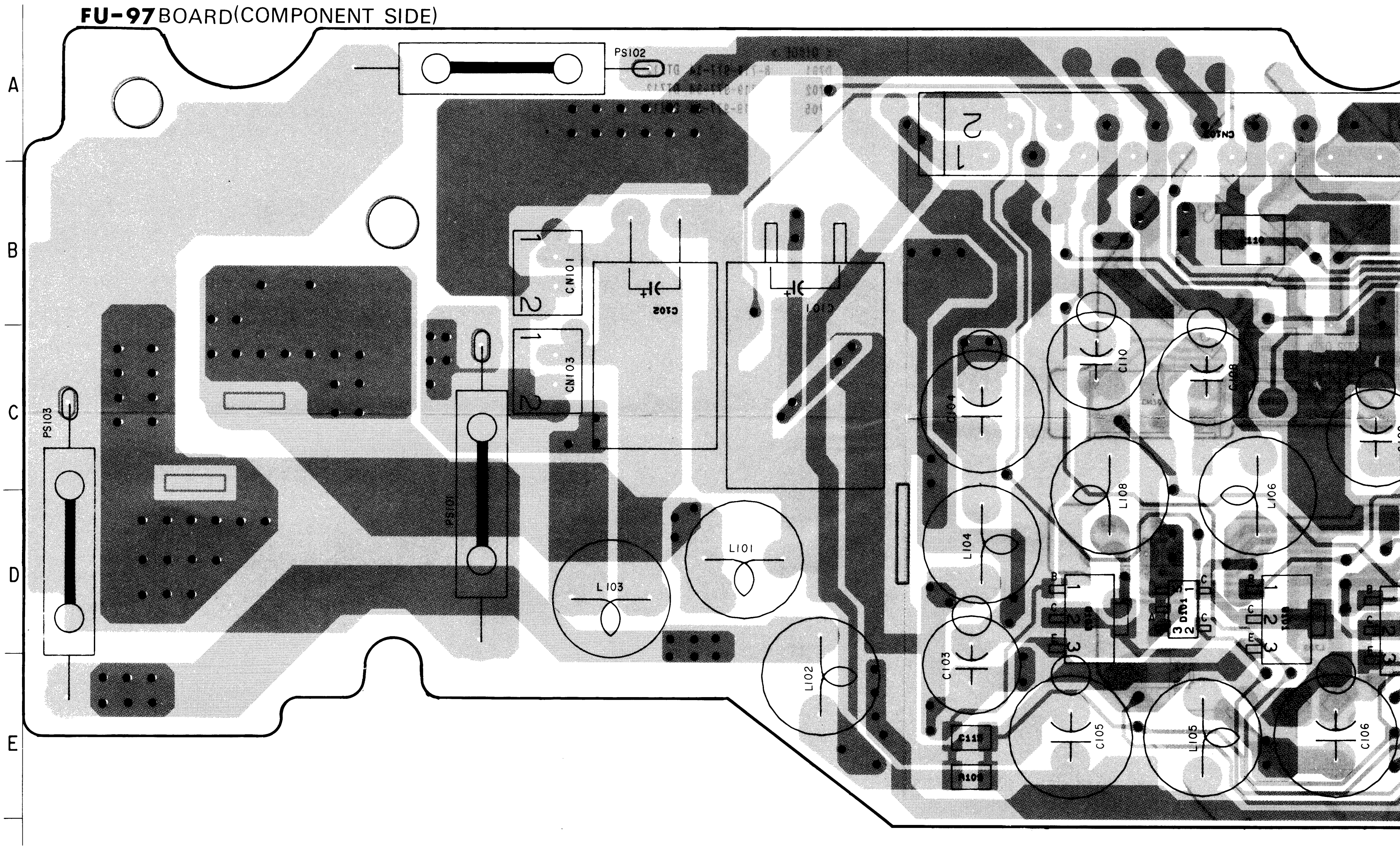
< IC >

IC101	8-759-035-98	MC141600FU

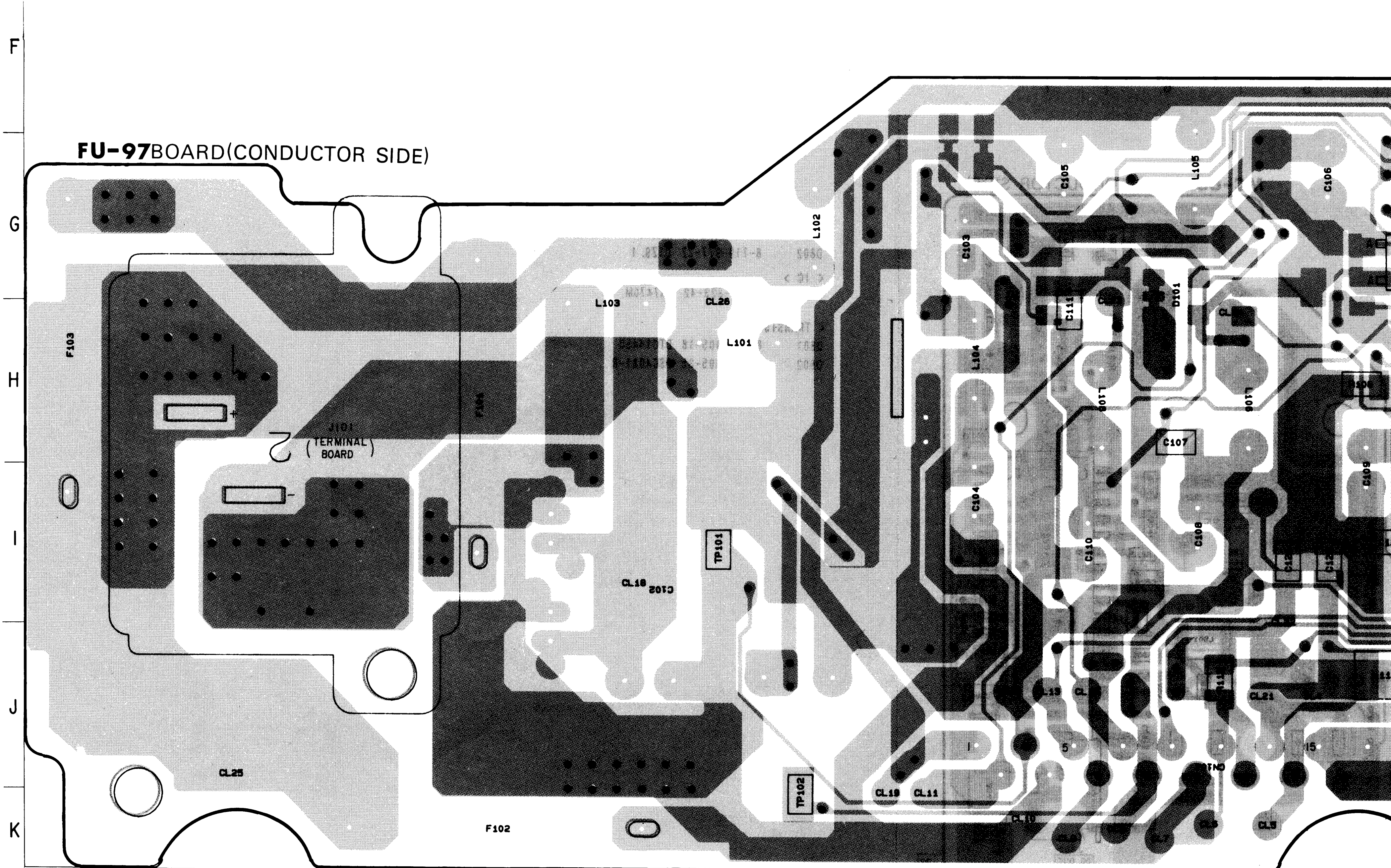
< TRANSISTOR >

Q101	8-729-805-25	2SB1121
Q102	8-729-822-60	2SB1302
Q103	8-729-805-25	2SB1121

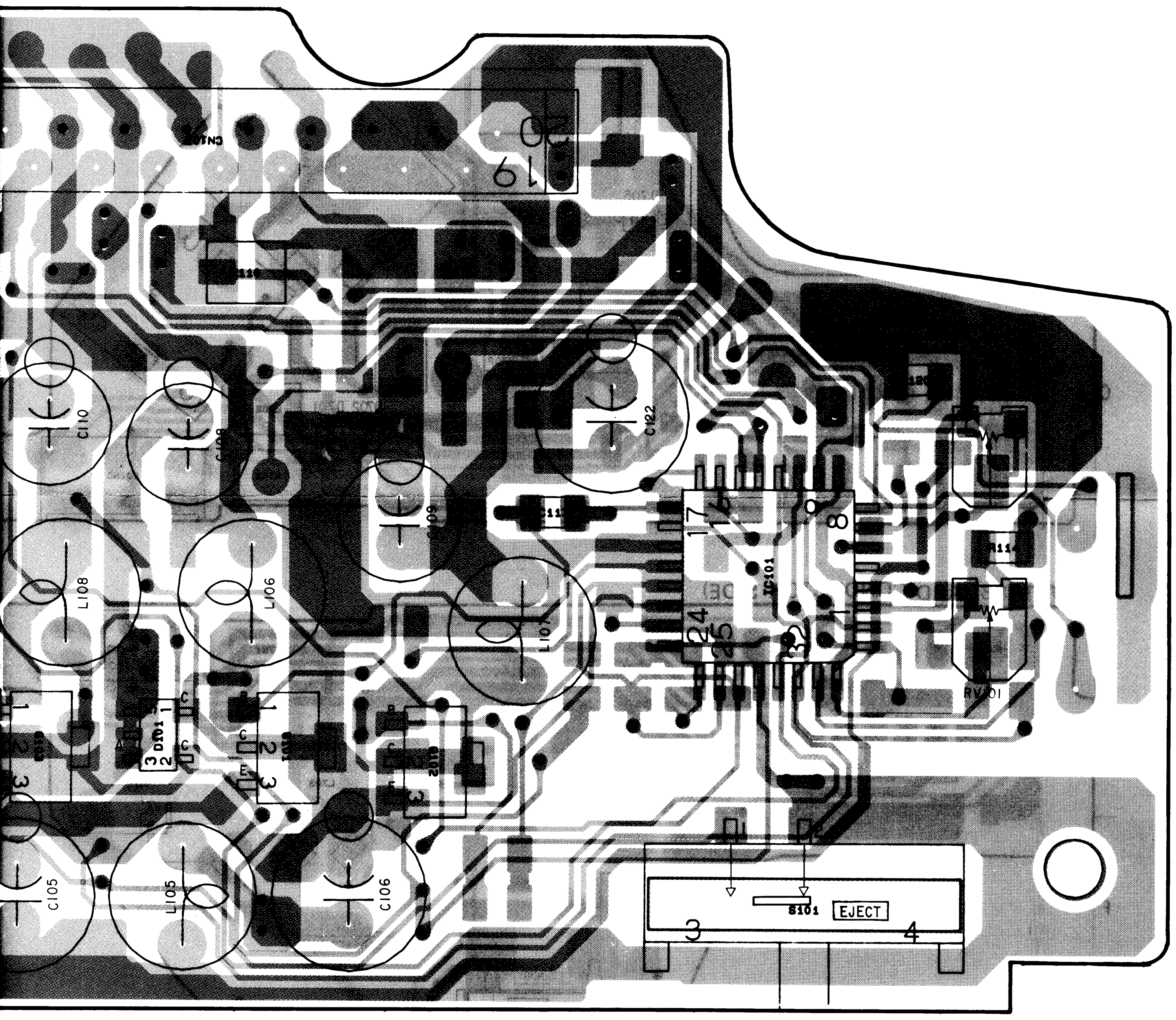
FU-97 BOARD (COMPONENT SIDE)

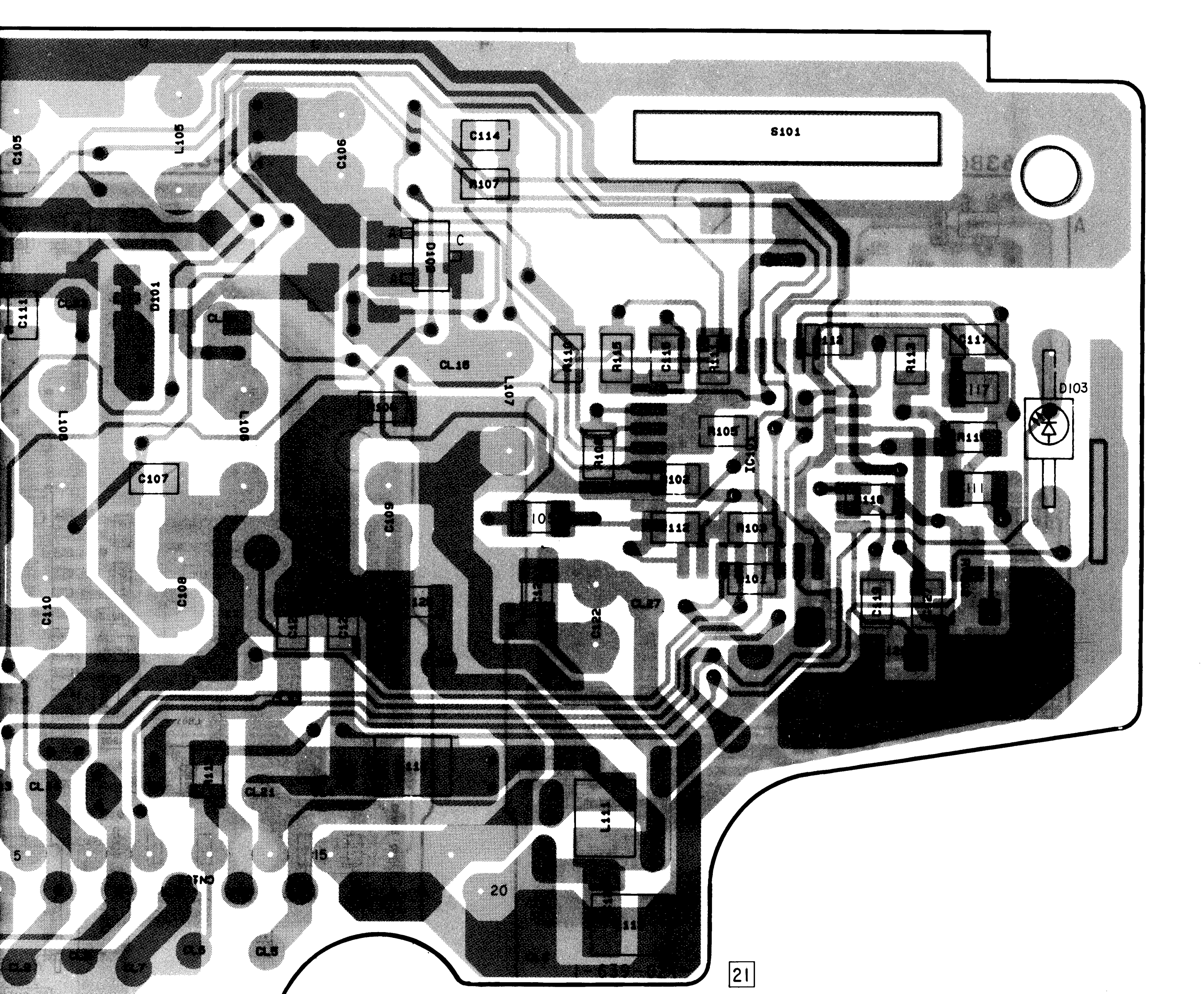

A
B
C
D
E
PS102
CN101
CN103
C102
PS103
PS101
L101
L103
L102
C104
L104
C103
C105
L105
C106
C110
C108
L108
L106
D101

FU-97 BOARD (CONDUCTOR SIDE)

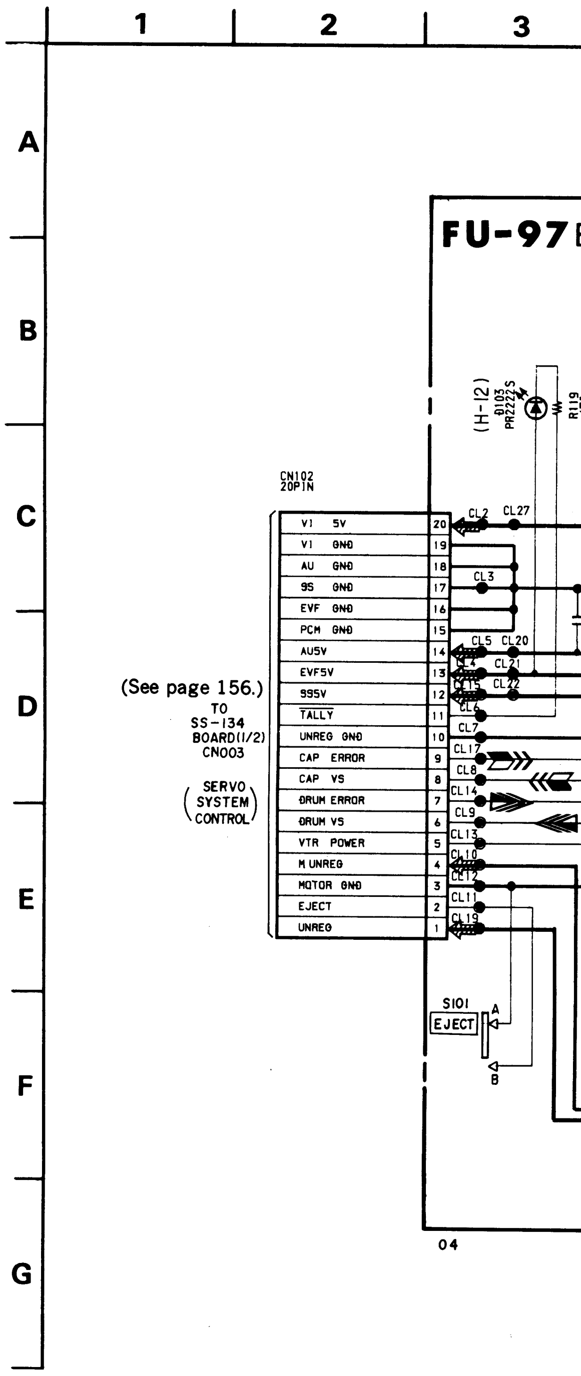

F
G
H
I
J
K
04
1
2
3
4
5
6
7
8
F103
J101 (TERMINAL BOARD)
TP101
TP102
CL25
F102
L103
CL26
L101
L102
C105
L105
C106
C103
C111
D101
L104
C107
C104
C110
C108
CL18
C102
CL19
CL11
CL10
CL21

1121
1302
1121


C110
C108
C122
C109
L108
L106
L107
IC101
17
16
9
8
24
25
32
1
D101
D110
C105
L105
C106
S101
EJECT
3
4
RV101
R114
CN102
19
20

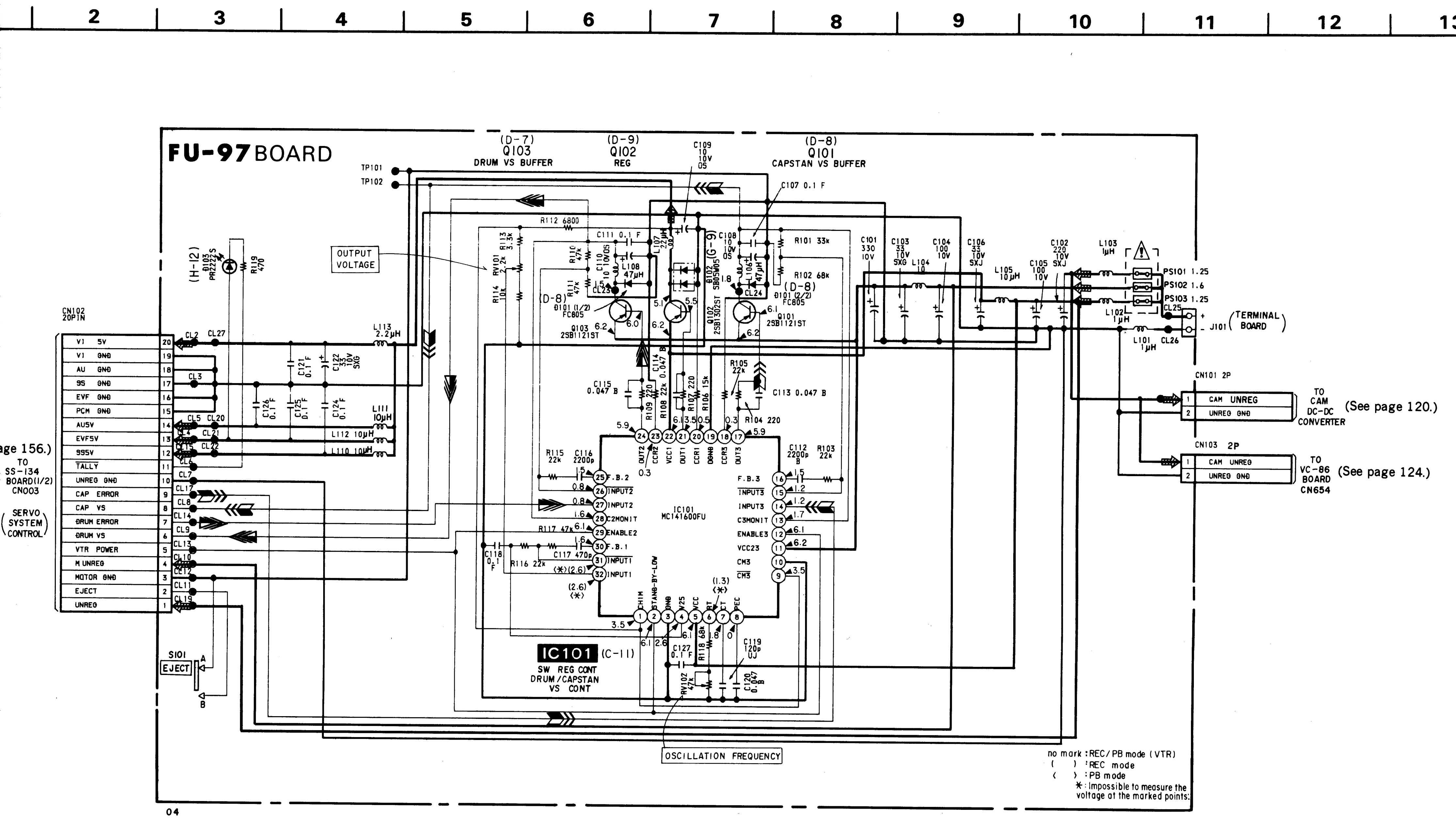

C105
L105
C106
C114
R107
S101
D110
D101
C107
C109
L106
L108
C108
C110
CL16
L107
IC101
R105
R102
R112
R109
R116
R115
R117
D103
L11
CL27
CL21
CL5
CL2
20
21
7
8
9
10
11
12

FU-97 (POWER) SCHEMATIC DIAGRAM
—Ref. No. FU-97 BOARD : 7000 series—


1
2
3
A
B
C
D
E
F
G
FU-97
(H-12)
D103
PR2222S
R119
CN102
20PIN
V1 5V
V1 GND
AU GND
SS GND
EVF GND
PCM GND
AU5V
EVF5V
SS5V
TALLY
UNREG GND
CAP ERROR
CAP VS
DRUM ERROR
DRUM VS
VTR POWER
M UNREG
MOTOR GND
EJECT
UNREG
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
CL2
CL27
CL3
CL5
CL20
CL4
CL21
CL15
CL22
CL6
CL7
CL17
CL8
CL14
CL9
CL13
CL10
CL12
CL11
CL19
(See page 156.)
TO
SS-134
BOARD(1/2)
CN003
SERVO
SYSTEM
CONTROL
S101
EJECT
A
B
04

WER) SCHEMATIC DIAGRAM

U-97 BOARD : 7000 series—

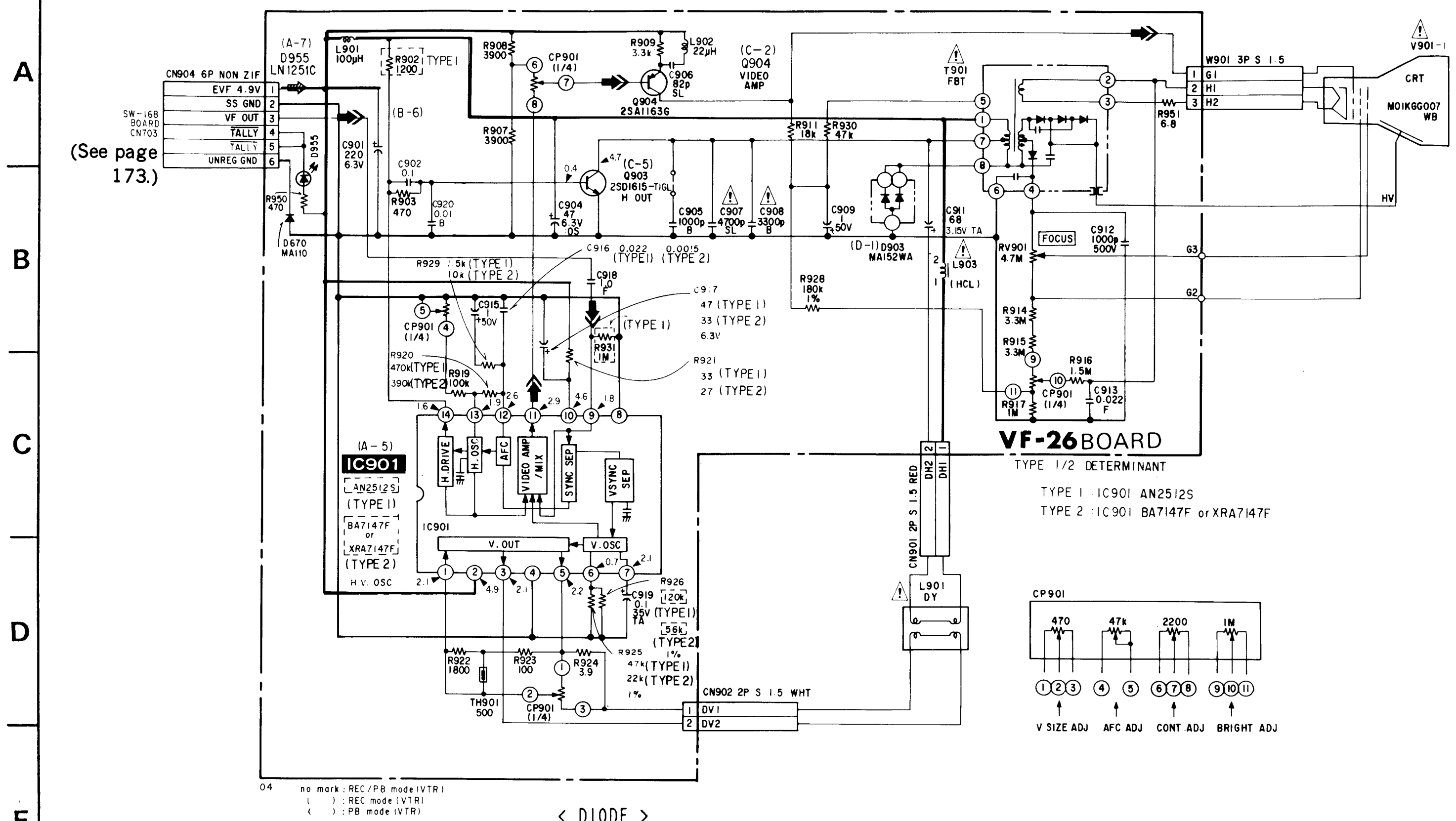

2
3
4
5
6
7
8
9
10
11
12
FU-97 BOARD
(D-7) Q103 DRUM VS BUFFER
(D-9) Q102 REG
(D-8) Q101 CAPSTAN VS BUFFER
TP101
TP102
OUTPUT VOLTAGE
(H-12) D103 PR2222S
R119 470
CN102 20PIN
20 VI 5V
19 VI GND
18 AU GND
17 SS GND
16 EVF GND
15 PCM GND
14 AU5V
13 EVF5V
12 SS5V
11 TALLY
10 UNREG GND
9 CAP ERROR
8 CAP VS
7 DRUM ERROR
6 DRUM VS
5 VTR POWER
4 M UNREG
3 MOTOR GND
2 EJECT
1 UNREG
ge 156.)
TO SS-134 BOARD(1/2) CN003
(SERVO SYSTEM CONTROL)
S101 EJECT
A
B
L113 2.2μH
L111 10μH
L112 10μH
L110 10μH
C121 0.1 F
C122 33 10V SXG
C126 0.1 F
C125 0.1 F
C124 0.1 F
R112 6800
R113 3.3k
RV101 2.2k
R114 10k
C111 0.1 F
R110 47k
C110 10 10V OS
L107 22μH
L108 47μH
R111 47k
D101 (1/2) FC805
Q103 2SB1121ST
C115 0.047 B
R109 220
R108 22k
C114 0.047 B
R107 220
R106 15k
R105 22k
C113 0.047 B
R104 220
C109 10 10V OS
C108 10 10V OS
D102 SB05W05 (G-9)
Q102 2SB1302ST
L106 47μH
C107 0.1 F
R101 33k
R102 68k
(D-8) D101 (2/2) FC805
Q101 2SB1121ST
R115 22k
C116 2200p
R117 47k
C118 0.1 F
R116 22k
C117 470p
IC101 MC141600FU
IC101 (C-11)
SW REG CONT DRUM/CAPSTAN VS CONT
C112 2200p B
R103 22k
C127 0.1 F
R118 68k
RV102 47k
C119 120p UJ
C120 0.047 B
OSCILLATION FREQUENCY
C101 330 10V
C103 33 10V SXG
L104 10
C104 100 10V
C106 33 10V SXJ
L105 10μH
C105 100 10V
C102 220 10V SXJ
L103 1μH
L102 1μH
L101 1μH
PS101 1.25
PS102 1.6
PS103 1.25
CL25
CL26
J101 (TERMINAL BOARD)
CN101 2P
1 CAM UNREG
2 UNREG GND
TO CAM DC-DC CONVERTER (See page 120.)
CN103 2P
1 CAM UNREG
2 UNREG GND
TO VC-86 BOARD CN654 (See page 124.)
no mark : REC/PB mode (VTR)
( ) : REC mode
〈 〉 : PB mode
✱ : Impossible to measure the voltage at the marked points.
04

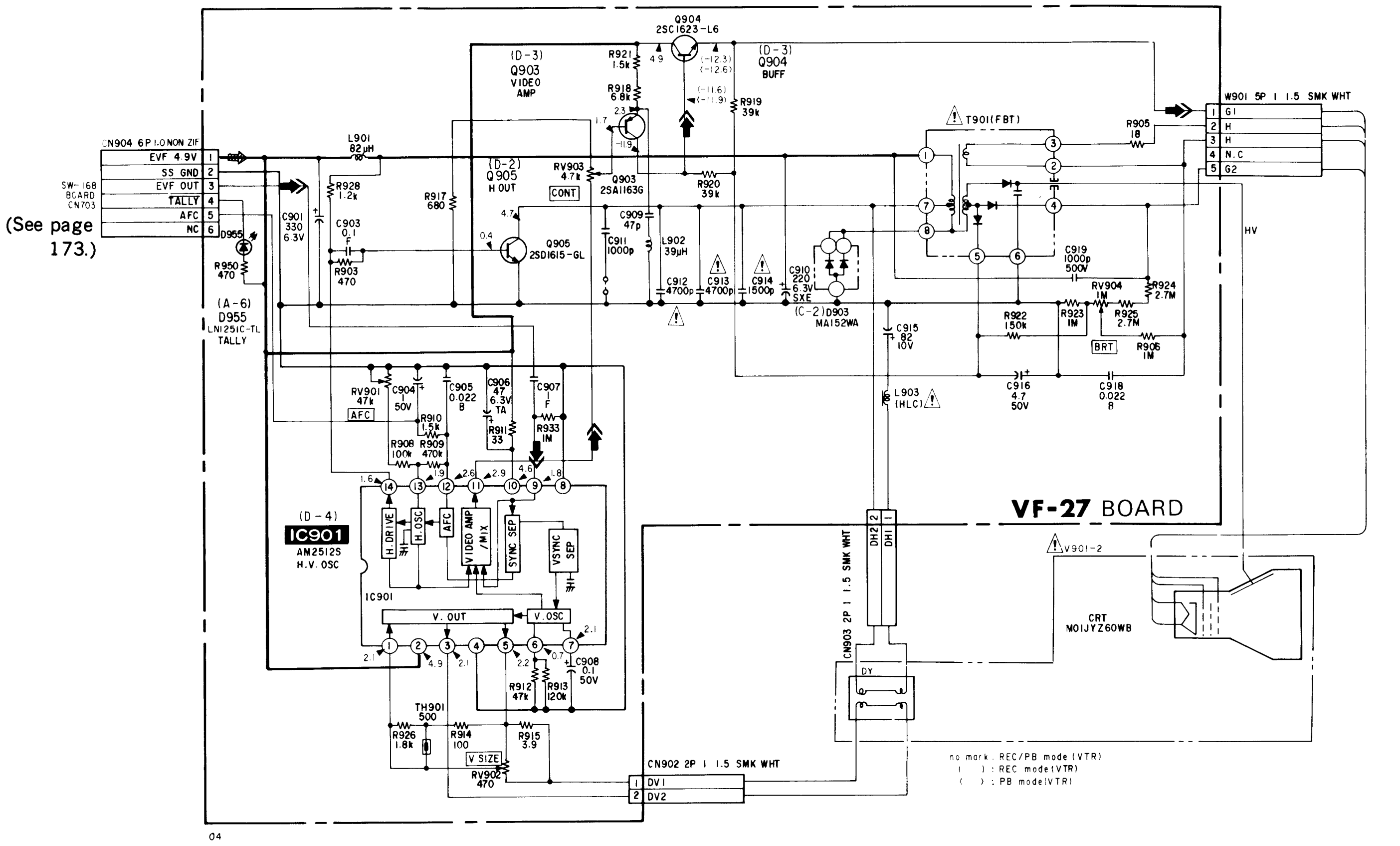
- **Signal path**

	REC	REC/PB	P
Drum speed servo		▷	
Drum phase servo		⊳⊳	
Drum servo(speed and phase)		⊳⊳⊳	
Capstan speed servo		⊃	
Capstan phase servo	➤»	⊃»	
Capstan servo(speed and phase)		⊃»»	

VF-26, VF-27 (VIEWFINDER) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

—Ref. No. VF-26 BOARDS : 8000 series, VF-27 BOARD : 9000 series—


(See page 173.)
SW-168 BOARD CN703
CN904 6P NON ZIF
EVF 4.9V
SS GND
VF OUT
TALLY
TALLY
UNREG GND
D955 LN1251C
L901 100μH
Q904 2SA1163G
Q903 2SD1615-TIGL H OUT
T901 FBT
W901 3P S 1.5
V901-1
CRT M01KGG007 WB
HV
FOCUS
RV901 4.7M
L903 (HCL)
D903 MA152WA
D670 MA110
IC901 AN2512S (TYPE 1) BA7147F or XRA7147F (TYPE 2)
H.V. OSC
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
TH901 500
CN901 2P S 1.5 RED
DH1
DH2
L901 DY
CN902 2P S 1.5 WHT
DV1
DV2
VF-26 BOARD
TYPE 1/2 DETERMINANT
TYPE 1 : IC901 AN2512S
TYPE 2 : IC901 BA7147F or XRA7147F
CP901
V SIZE ADJ
AFC ADJ
CONT ADJ
BRIGHT ADJ
no mark : REC/PB mode (VTR)
( ) : REC mode (VTR)
〈 〉 : PB mode (VTR)


(See page 173.)
SW-168 BOARD CN703
CN904 6P 1.0 NON ZIF
EVF 4.9V
SS GND
EVF OUT
TALLY
AFC
NC
L901 82μH
D955 LN1251C-TL TALLY
Q903 VIDEO AMP
Q904 2SC1623-L6 BUFF
Q905 2SD1615-GL H OUT
Q903 2SA1163G
CONT
T901 (FBT)
W901 5P I 1.5 SMK WHT
G1
H
H
N.C
G2
HV
D903 MA152WA
L903 (HLC)
BRT
AFC
IC901 AN2512S H.V. OSC
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
V SIZE
TH901 500
CN903 2P I 1.5 SMK WHT
DH2
DH1
DY
CN902 2P I 1.5 SMK WHT
DV1
DV2
VF-27 BOARD
V901-2
CRT M01JYZ60WB
no mark : REC/PB mode (VTR)
( ) : REC mode (VTR)
〈 〉 : PB mode (VTR)

• Signal path

	VIDEO Signal		
	CHROMA	Y	Y/CHROMA
REC	➡	➡➡	➡➡➡
PB	⇨	⇨⇨	⇨⇨⇨

< DIODE >

D670	8-719-404-46	MA110
D903	8-719-400-20	MA152WA
D955	8-719-404-19	LN1251C

< IC >

IC901	8-759-420-01	AN2512S (TYPE 1)
IC901	8-759-511-01	BA7147F (TYPE 2)
IC901	8-759-514-92	XRA7147F (TYPE 2)

< TRANSISTOR >

Q903	8-729-106-68	2SD1615-AGP
Q904	8-729-216-31	2SA1163G

< DIODE >

D903	8-719-400-20	MA152WA
D955	8-719-404-19	LN1251C

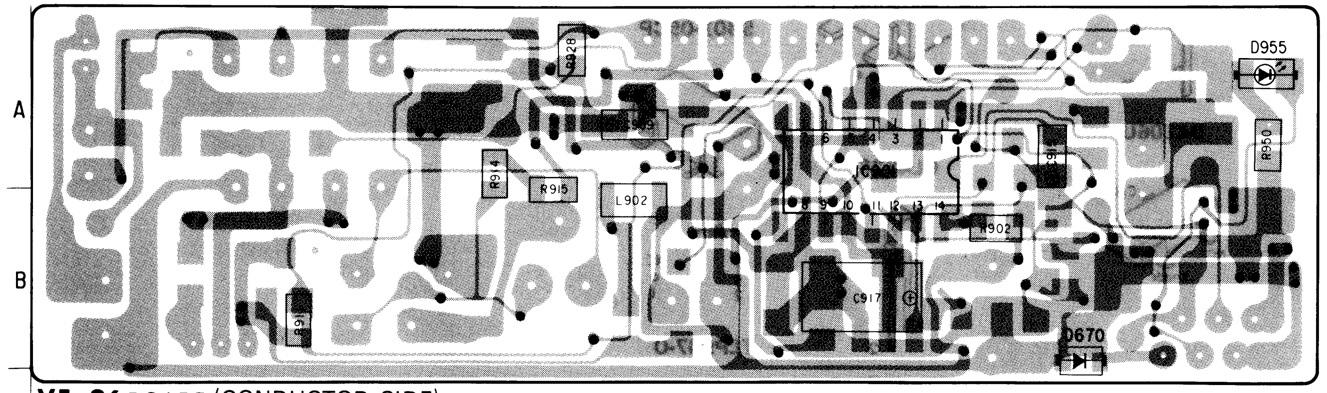
< IC >

IC901	8-759-420-01	AN2512S

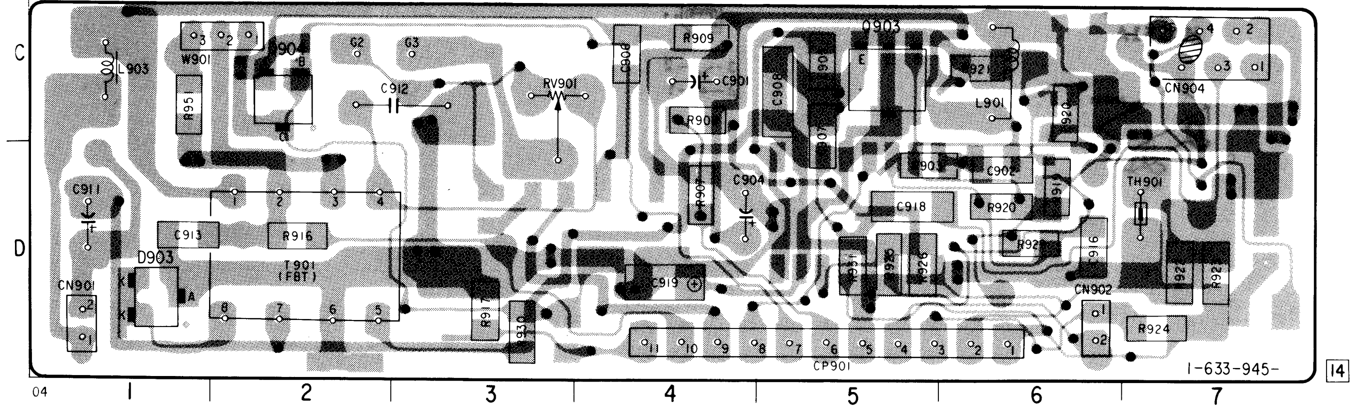
< TRANSISTOR >

Q903	8-729-216-31	2SA1163G
Q904	8-729-100-66	2SC1623
Q905	8-729-106-68	2SD1615-AGP

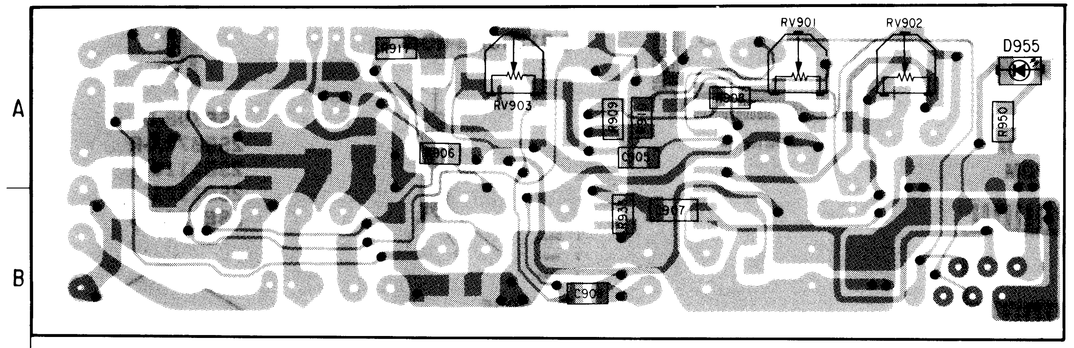
VF-26 BOARD (COMPONENT SIDE)


A
B
D955
R928
R950
R914
R915
L902
IC901
R902
C917
D670
R917

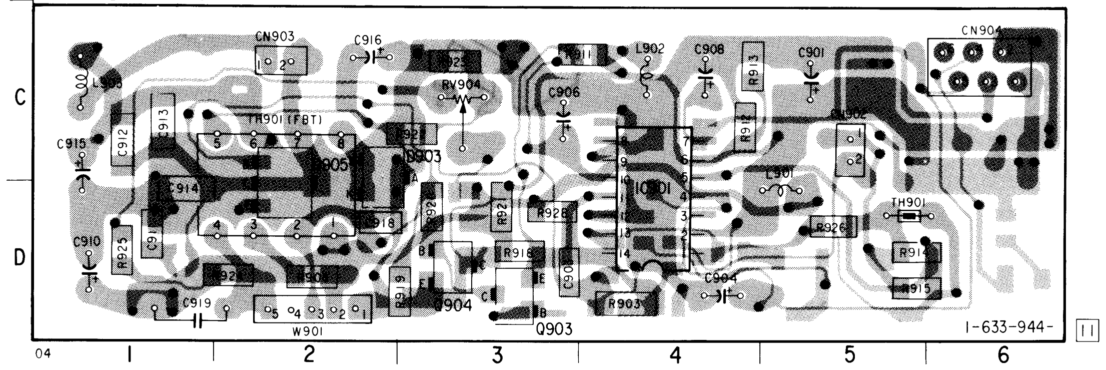
VF-26 BOARD (CONDUCTOR SIDE)


C
D
L903
W901
Q904
G2
G3
R951
C912
RV901
R909
Q903
C901
L901
C904
C902
C918
R920
TH901
CN904
C911
C913
D903
R916
T901 (FBT)
CN901
C919
CN902
R924
CP901
1-633-945-
14
04
1
2
3
4
5
6
7

VF-27 BOARD (COMPONENT SIDE)

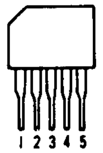

A
B
RV901
RV902
D955
RV903
R950
R911
C909
C905
R905
C907
C903

VF-27 BOARD (CONDUCTOR SIDE)

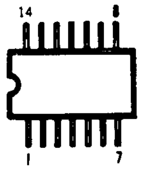

C
D
CN903
C916
L902
C908
C901
CN904
RV904
C906
TH901 (FBT)
Q905
D903
C915
C912
C914
C910
R925
C919
W901
Q904
Q903
IC901
L901
TH901
R926
R914
R915
R903
R918
1-633-944-
11
04
1
2
3
4
5
6

4-3. SEMICONDUCTORS

BA401

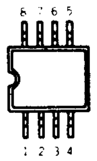


BA7147F
BU4066BF
CX20095A
CXA1443N
CXA8010M
LM324D
MC14066BF
TL1596CDB
XRA7147F
XRU4066BF



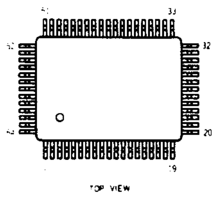
(TOP VIEW)

BR93C46F
CXL1506F
HA118070FP
LM358D
LM393D
MM1036XF
NJM2233AM
NJM2234M
NJM2235M
RC3414M

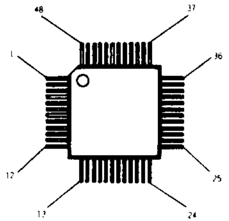


(TOP VIEW)

CF79028PG

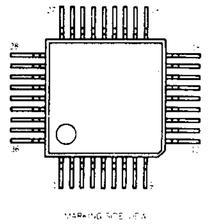


CXA-1488R
CXA1208R
CXA1392R
MB673198U

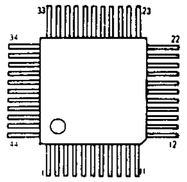

48
37
1
36
12
25
13
24

(TOP VIEW)

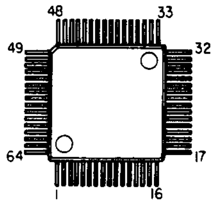
CXA-1536Q



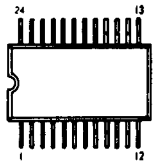
CXA1204Q
M51285BGP


33
23
34
22
44
12

CXA1207AR
MC68HC11E9FU

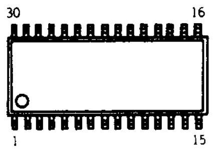

48
33
49
32
64
17
1
16

CXA1203N
CXA1393AN
LA7470M



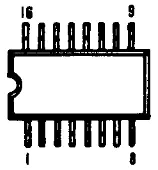
(TOP VIEW)

CXA8006M



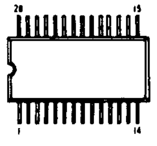
(Top view)

CXD-2107M
HD14053BF
MC14028BF
MC14053BF
TC4028BF
MC10H116M



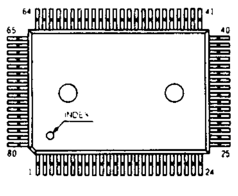
(TOP VIEW)

CXK58257M-10L



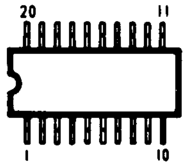
(TOP VIEW)

CXP80116-837Q
MC14094BF
µPD75316GF


64
41
65
40
80
25
1
24

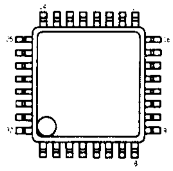
MARKING SIDE VIEW

M62352GP
µPD6451AGT-611-E1
µPD7564G-540

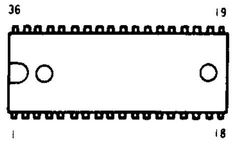


(TOP VIEW)

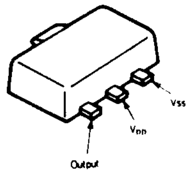
MC141600FU



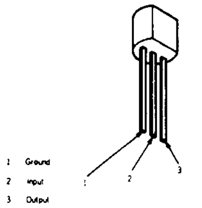
MCD002AM



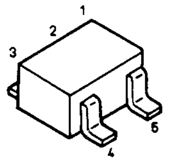
S-8054ALB-LM-S


Vss
VDD
Output

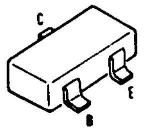
S-81250HG-RD-S


1 Ground
2 Input
3 Output
1
2
3

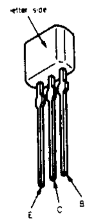
TC7S08F



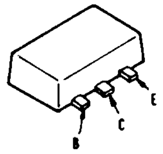
2SA1122-CD
2SA1162-G
2SA1163-G
2SA1576-R
2SA1576-S
2SA1611-M5M6
2SB624-BV345
2SC1623
2SC2223-F13
2SC3326N
2SC4081-R
2SC4081-S
2SC4177-L5
2SC4178
2SK1332-3
DTA114TU
DTA143EU
DTA144EU
DTA144TU
DTC114EU
DTC114TU
DTC115EU
DTC143EU
DTC143TU
DTC144EU
DTC144TU
DTC144WU



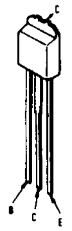
2SA1175-HFE



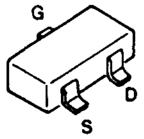
2SB798-DL
2SB874A-R
2SB1115A
2SB1121
2SB1302-S



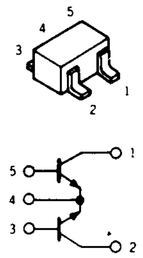
2SB1202FAT



2SK94

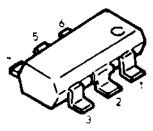


FMA2
FMG2
FMG4
FMG5
FMW1


5
4
3
1
2
5
4
3
1
2

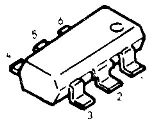
1 Tr1 :Collector 1
2 Tr2 :Collector 2
3 Tr2 :Base 2
4 Tr1, 2 :Emitter
5 Tr1 :Base 1

FC101
IMH6
IMH8
XN6213
XN6215
XN6401
XN6501



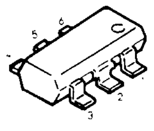
1 ; 1C, 2 ; 1B, 3 ; 2C,
4 ; 2B, 5 ; 2E, 6 ; 1E

IMX1



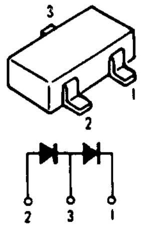
1 ; 1C, 2 ; 2B, 3 ; 2E,
4 ; 2C, 5 ; 1B, 6 ; 1E

XN4601

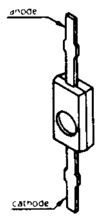


1 ; 1C, 2 ; 2B, 3 ; 2E,
4 ; 2C, 5 ; 1B, 6 ; 1E

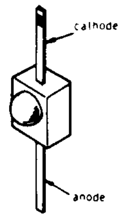
1SS226
MA143



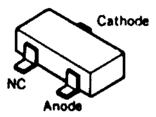
1T32


anode
cathode

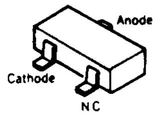
AR2222S


cathode
anode

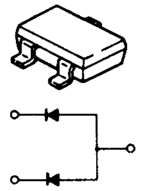
DA106U


Cathode
NC
Anode

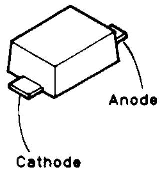
DA204U
DAN202U
MA151A


Anode
Cathode
NC

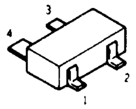
DAP202U



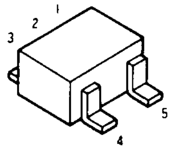
DTZ12
DTZ4. 3A
DTZ9. 1
MA110


Anode
Cathode

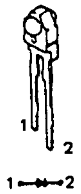
DWA010



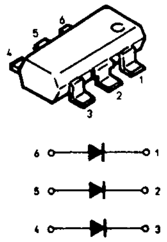
FC805



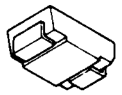
GL452S



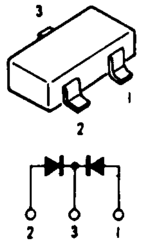
IMN10


6
5
4
3
2
1
6
1
5
2
4
3

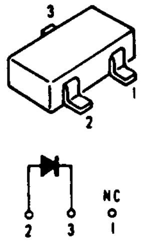
LN1251C



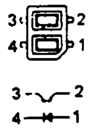
MA141A
MA141WA
MA152WA
SB05W05CP



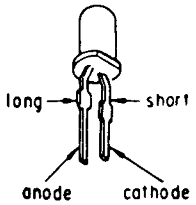
SB01-05CP



TLP907-O



TLP124


long
short
anode
cathode

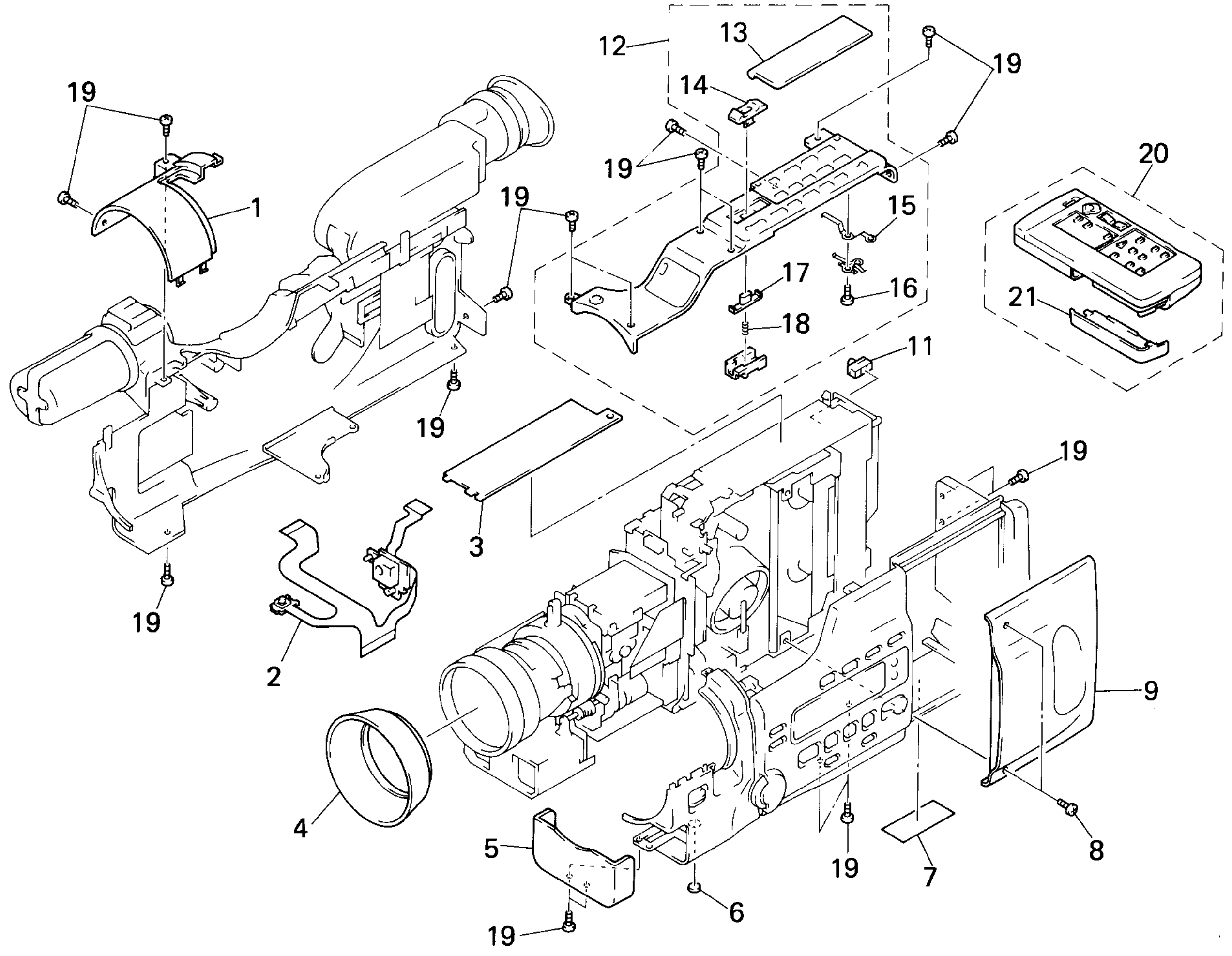
SECTION 5
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE)...(RED)
  ↑ Parts Color ↑ Cabinet's Color
- Hardware(# mark) list is given in the last of this parts list.

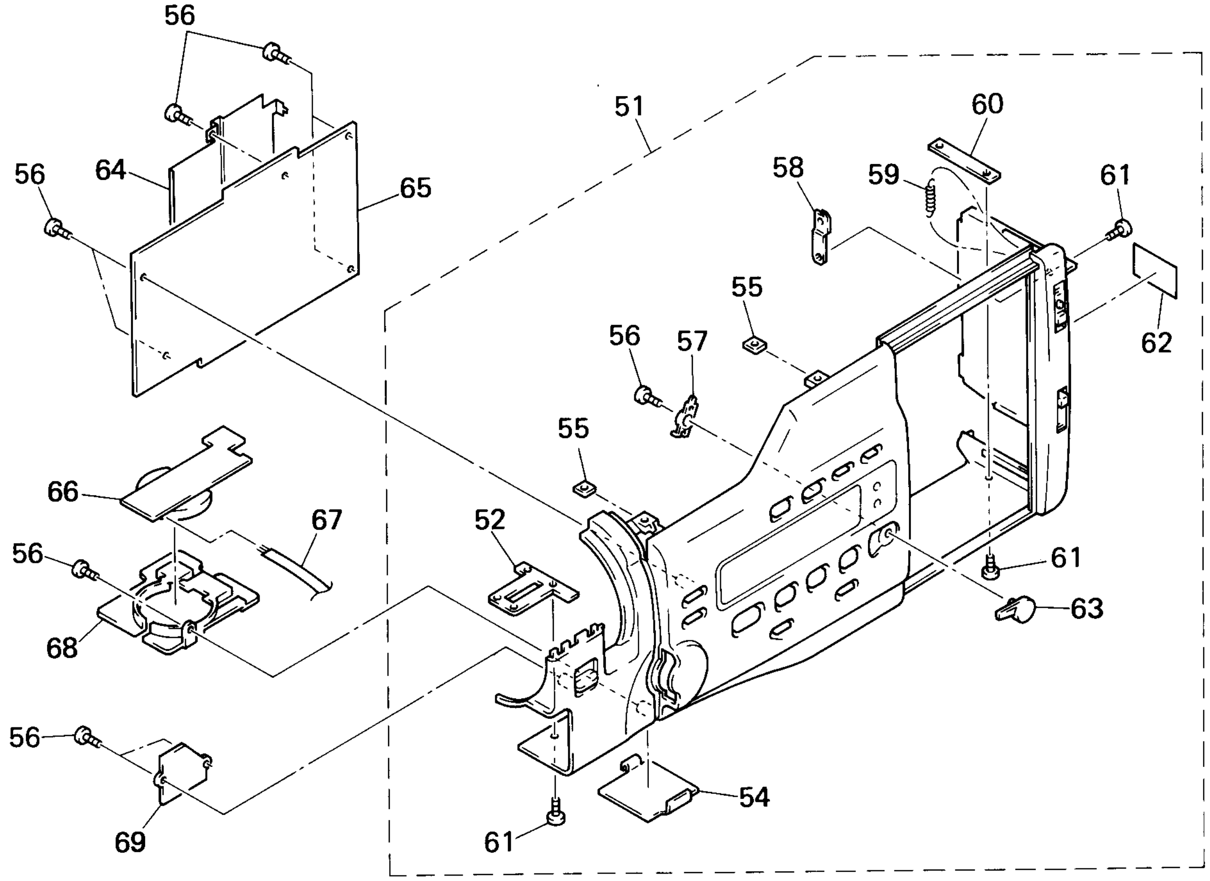
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

5-1. CABINET (UPPER) ASSEMBLY



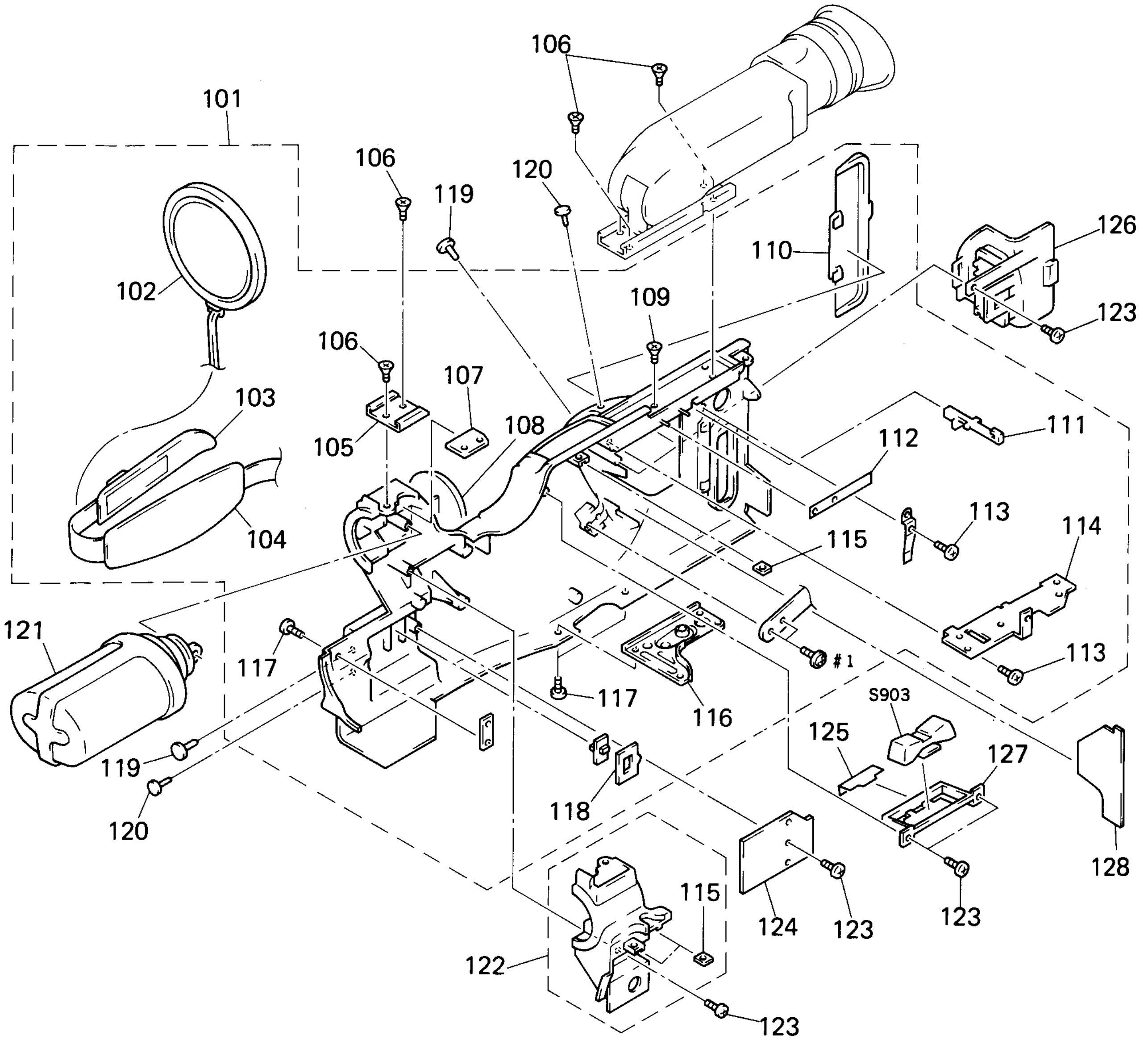
Ref. No.	Part No.	Description	Remark
1	3-942-213-01	CABINET, LENS	
2	1-639-030-11	FP-376 FLEXIBLE BOARD	
3	* A-7071-434-A	FK-47 BOARD, COMPLETE	
4	3-739-844-01	HOOD, LENS	
5	X-3940-763-1	FILTER ASSY	
6	3-942-193-01	CAP, AF	
7	* 3-942-777-01	LABEL, MODEL NUMBER (AEP)	
	* 3-943-100-01	LABEL, MODEL NUMBER (UK)	
8	3-733-912-11	SCREW (M2X4.5), SPECIAL HEAD	
9	X-3940-672-1	LID ASSY, CASSETTE	
11	3-744-743-01	KNOB, 10 SELECTION	
12	X-3940-673-1	CABINET (UPPER) ASSY	
13	3-744-750-01	LID, UPPER	
14	3-744-723-01	BUTTON (10), POWER	
15	3-744-732-01	SPRING, CLICK	
16	3-713-790-11	SCREW (M2X5), TAPPING, P3	
17	* 3-718-257-11	BUTTON, PUSH, POWER	
18	3-303-973-00	SPRING, COMPRESSION	
19	3-719-381-01	SCREW (M2X4)	
20	1-465-395-81	COMMANDER., REMOTE (RMT-502)	
21	3-742-854-01	COVER, BATTERY	

5-2. CABINET (RIGHT) ASSEMBLY



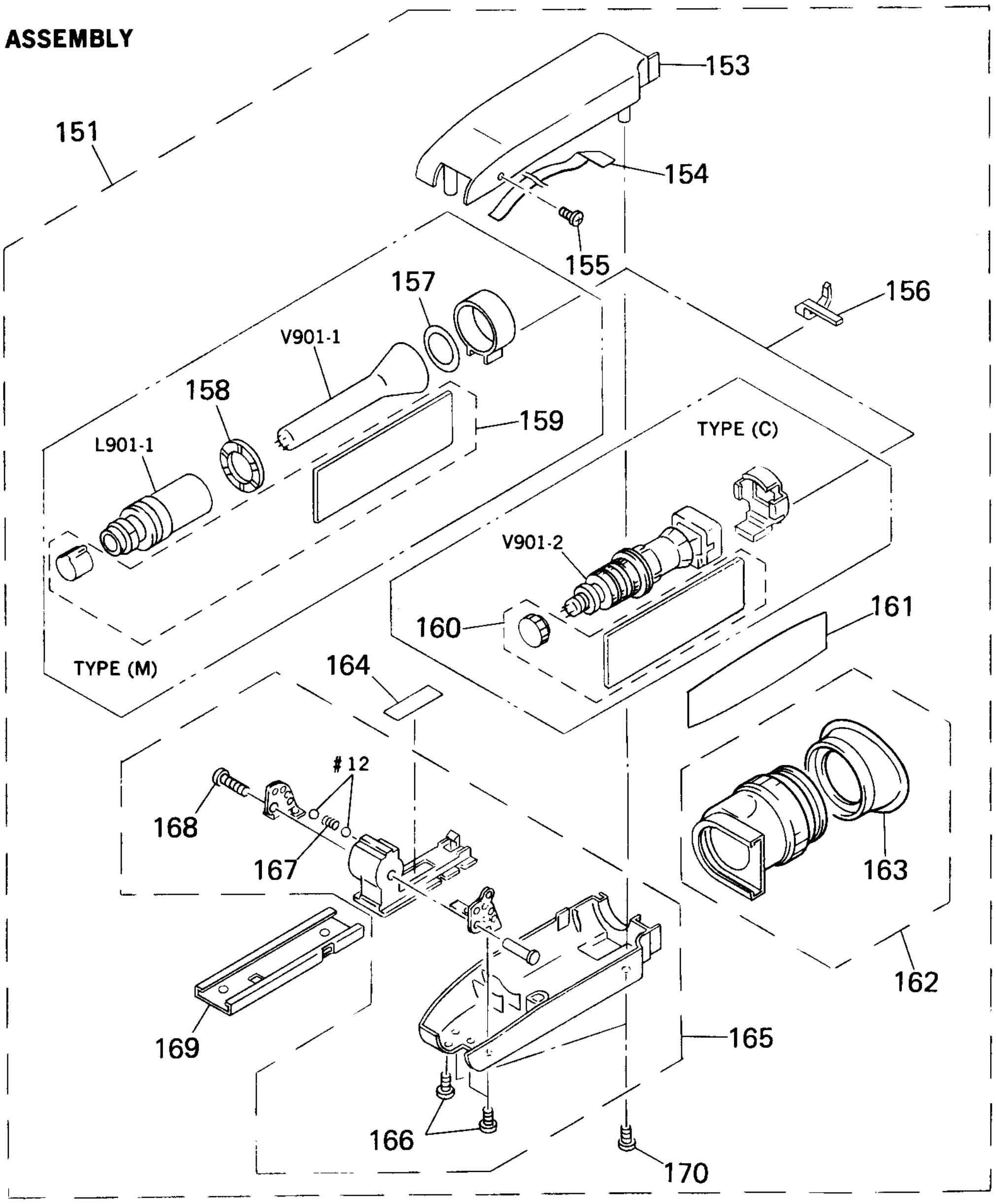
Ref. No.	Part No.	Description	Remark
51	X-3940-495-1	CABINET (R) SUB ASSY	
52	3-942-194-01	NUT, PLATE, C	
54	3-728-160-01	LID, BATTERY CASE	
55	3-718-233-01	NUT, PLATE	
56	3-713-790-11	SCREW (M2X5), TAPPING, P3	
57	3-942-189-01	LEVER, AUTOLOCK	
58	3-744-741-01	SHEET METAL, R	
59	3-674-402-00	SPRING, TENSION	
60	3-942-195-01	NUT, PLATE, V	
61	3-744-720-11	SCREW (M2X3)	
62	* 3-719-683-01	LABEL, BATTERY FITTING	
63	3-942-192-01	KNOB, AUTOLOCK	
64	* 3-942-201-01	CASE (08), FD SHIELD	
65	* A-7062-799-A	FD-44 BOARD, COMPLETE	
66	* A-7071-435-A	LI-33 BOARD, COMPLETE	
67	1-639-101-11	FP-458 FLEXIBLE BOARD	
68	* 3-942-212-01	FRAME, CAMERA	
69	* A-7071-436-A	FA-2 BOARD, COMPLETE	

5-3. CABINET (GRIP) ASSEMBLY


106
101
106
119
120
126
110
102
123
109
106
107
103
108
105
111
112
113
114
104
115
121
117
#1
113
117
116
S903
125
127
119
120
118
128
115
124
123
123
122
123

Ref. No.	Part No.	Description	Remark
101	X-3940-674-1	CABINET (G) SUB ASSY	
102	X-3744-708-1	CAP ASSY, HOOD	
103	3-739-866-81	BELT, GRIP	
104	3-724-591-01	PAD, GRIP	
105	3-724-511-01	SHOE, ACCESSORY	
106	3-742-871-11	SCREW (M2X4)	
107	3-744-739-01	NUT (10), LINING PLATE	
108	3-942-183-01	CAP, MICROPHONE	
109	3-742-871-21	SCREW (M2X3)	
110	3-744-704-15	LID, CONNECTOR	
111	3-744-709-01	LOCK, SLIDE	
112	3-744-717-01	SPRING, LOCK	
113	3-713-790-11	SCREW (M2X5), TAPPING, P3	
114	* 3-744-754-01	BRACKET, VF	
115	3-718-233-01	NUT, PLATE	
116	3-942-205-01	SHEET METAL, TRIPOD	
117	3-744-720-11	SCREW (M2X3)	
118	3-744-735-01	RETAINER, M	
119	3-728-267-01	COVER, 3.5 JACK	
120	3-728-266-01	COVER, 2.5 JACK	
121	* 8-814-268-00	MICROPHONE C-2033 SET	
122	X-3940-491-1	CABINET ASSY, MICROPHONE	
123	3-713-790-21	SCREW (M2X6), TAPPING, P3	
124	* A-7062-800-A	MC-63 BOARD, COMPLETE	
125	* 3-746-251-01	SHEET, Z	
126	X-3744-723-1	BASE ASSY, SP	
127	X-3744-772-1	RETAINER ASSY, Z	
128	* A-7071-437-A	SW-168 BOARD, COMPLETE	
S903	1-572-320-11	SWITCH, PUSH (ZOOM)	

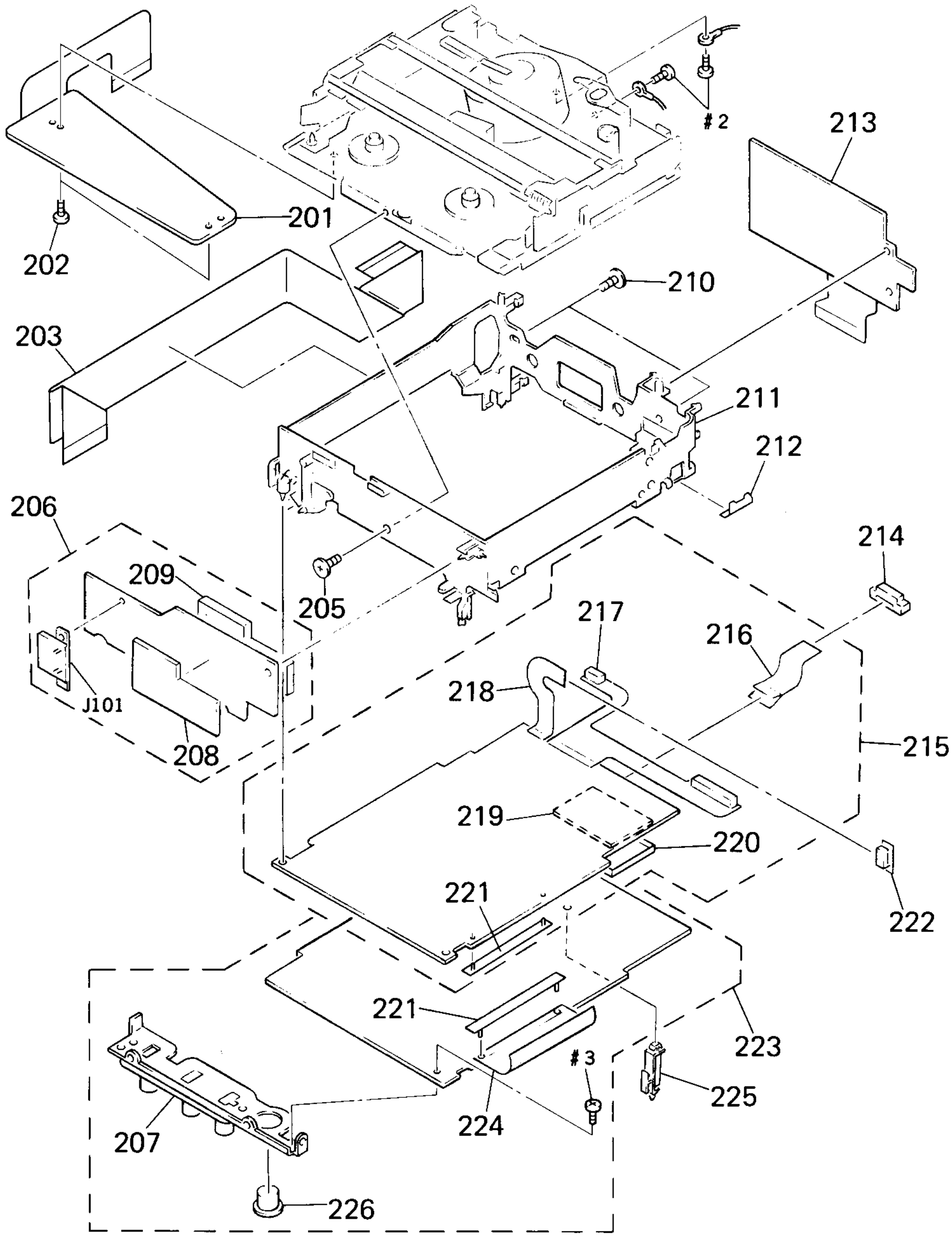
5-4. EVF (M,C) ASSEMBLY


153
151
154
155
157
156
V901-1
158
159
L901-1
TYPE (C)
V901-2
160
161
TYPE (M)
164
#12
168
167
163
162
169
165
166
170

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

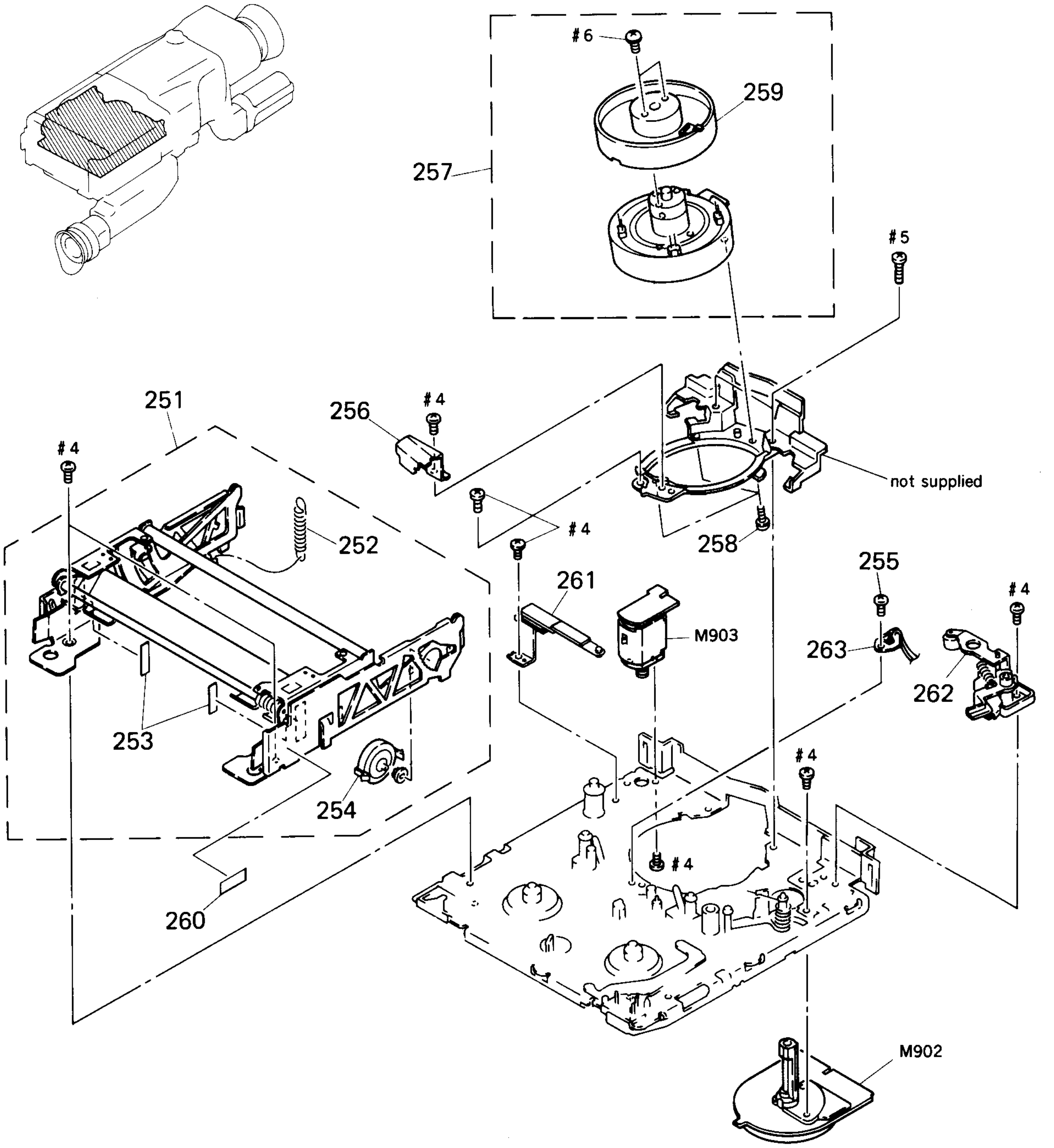
Ref. No.	Part No.	Description	Remark
151	A-7019-319-A	EVF (C) ASSY	
	A-7019-320-A	EVF (M) ASSY	
153	3-744-705-01	CASE, VF (UPPER)	
154	1-634-011-11	FP-264 FLEXIBLE BOARD	
155	3-744-720-11	SCREW (M2X3)	
156	3-744-722-01	GUIDE, VF TALLY	
157	3-724-570-01	RING, CRT FIXED	
158	3-724-549-01	LOCK, CRT	
159	* A-7062-278-A	VF-26 BOARD, COMPLETE	
160	* A-7062-279-A	VF-27 BOARD, COMPLETE	
161	3-744-775-01	INSULATOR, VF	
162	X-3940-369-1	FINDER (S) ASSY, SPORTS	
163	3-749-142-02	EYE CUP	
164	3-744-716-01	COVER, FL	
165	X-3744-701-1	CASE ASSY, LOWER, VF	
166	3-719-381-01	SCREW (M2X4)	
167	3-302-492-00	SPRING, COMPRESSION	
168	3-732-012-11	SCREW (M2X5)	
169	3-744-712-01	SHOE, VF	
170	3-713-790-31	SCREW (M2X8), TAPPING, P3	
L901-1⚠	1-451-310-21	DEFLECTION YOKE (B/W)	
V901-1⚠	1-546-085-11	CATHODE-RAY TUBE, B/W	
V901-2⚠	1-452-482-11	CRT ASSY (M91JYZ60WB)	

5-5. MAIN BOARDS ASSEMBLIES



Ref. No.	Part No.	Description	Remark
201	* A-7071-433-A	CC-60 BOARD, COMPLETE	
202	3-713-790-11	SCREW (M2X5), TAPPING, P3	
203	X-3940-504-1	FP-427 ASSY	
205	3-732-791-31	SCREW (M2X3)	
206	* A-7062-793-A	FU-97 BOARD, COMPLETE	
207	A-7091-210-A	PLATE ASSY, JACK	
208	* X-3744-707-1	LID ASSY, REAR, FU SHIELD	
209	* X-3744-706-1	CASE ASSY, SHIELD, FU	
210	3-732-791-01	SCREW (M2X3)	
211	3-744-779-01	FRAME, MD	
212	3-940-504-01	COVER, CAP	
213	* A-7062-796-A	AU-99 BOARD, COMPLETE	
214	1-569-347-11	CONNECTOR, FPC (TRANSLATION) 13P	
215	* A-7062-794-A	SS-134 BOARD, COMPLETE	
216	1-634-427-11	FP-256 FLEXIBLE BOARD	
217	1-634-428-11	FP-257 BOARD	
218	1-634-426-11	FP-255 FLEXIBLE BOARD	
219	* A-7068-183-A	HR-10 BOARD, COMPLETE	
220	* X-3744-711-1	LID ASSY, REAR, RP	
221	X-3744-720-1	HOLDER ASSY, FP	
222	1-569-346-11	CONNECTOR, FPC (TRANSLATION) 10P	
223	* A-7062-795-A	VA-64 BOARD, COMPLETE	
224	1-634-431-11	FP-260 FLEXIBLE BOARD	
225	3-744-757-01	SUPPORT (10), C	
226	1-566-850-31	CONNECTOR, (S) TERMINAL 4P	
J101	1-537-241-11	TERMINAL BOARD (BATTERY)	

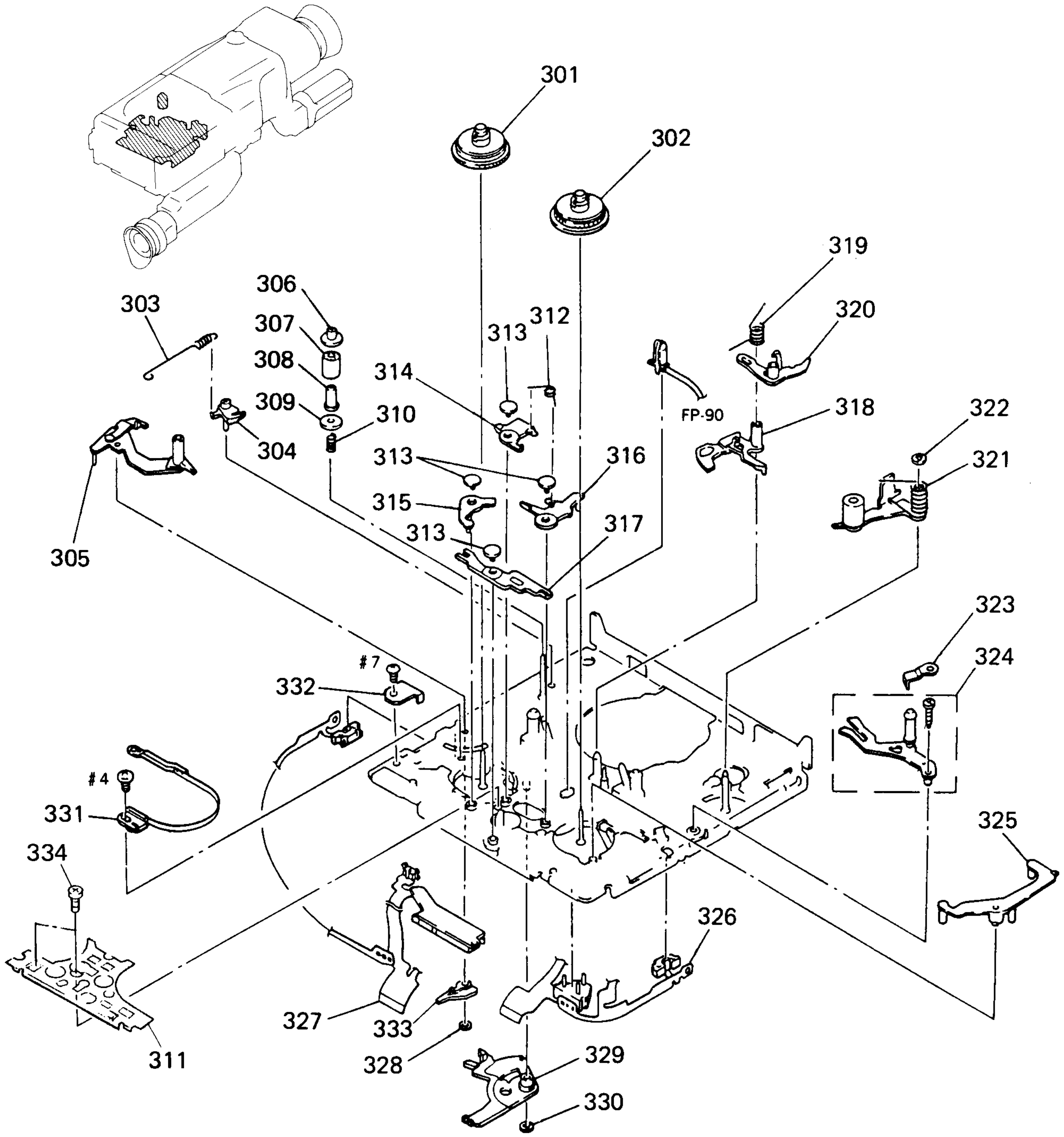
5-6. MECHANICAL CHASSIS ASSEMBLY (1)



#6
259
257
#5
251
256
#4
#4
not supplied
252
#4
258
261
M903
255
#4
263
262
253
#4
254
#4
260
M902

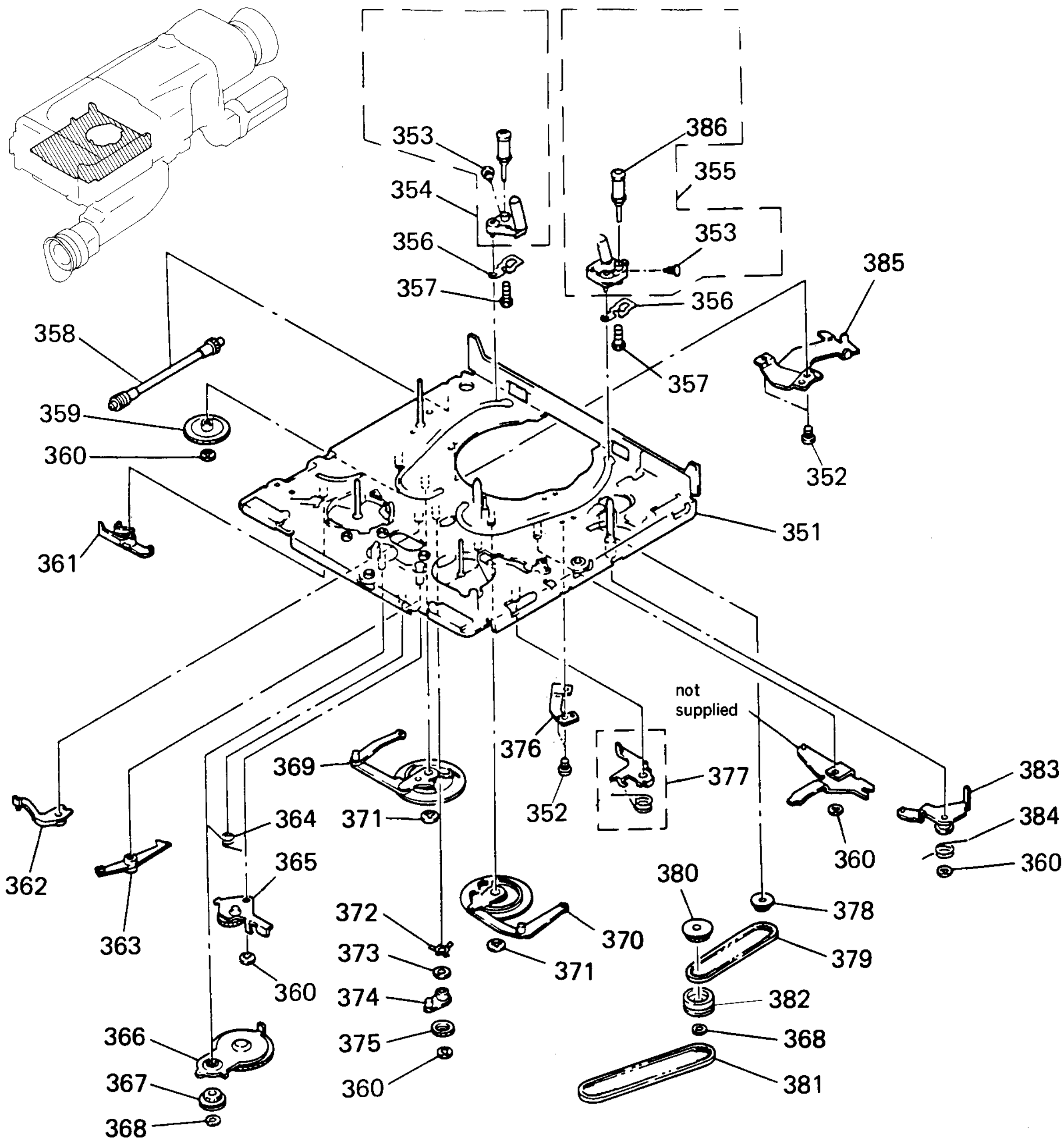
Ref. No.	Part No.	Description	Remark
251	X-3728-874-1	CASSETTE COMPARTMENT ASSY (N)	
252	3-728-825-03	SPRING, TENSION	
253	* 3-728-829-01	TAPE	
254	3-728-867-02	DAMPER, OIL	
255	3-732-087-31	SCREW (M1.4X1.8), SPECIAL HEAD	
256	3-728-868-01	GUARD, GUIDE	
257	A-7048-403-A	DRUM ASSY (DGU-62A-R)	
258	3-686-493-01	SCREW +P (M2X5)	
259	A-7049-341-A	DRUM ASSY, UPPER, ROTARY (DGR-62-R)	
260	* 3-730-176-11	SHEET, MD	
261	X-3728-864-1	GROUND ASSY, SHAFT	
262	A-7040-207-A	ROLLER BLOCK ASSY, HC	
263	1-808-505-12	SENSOR (DEW)	
M902	8-835-331-01	MOTOR, DC U-22A	
M903	A-7040-208-A	MOTOR ASSY, THREADING	

5-7. MECHANICAL CHASSIS ASSEMBLY (2)


301
302
319
306
303
307
313
312
320
308
314
309
310
FP-90
318
322
304
313
316
321
315
317
313
305
323
324
#7
332
#4
331
325
334
326
327
333
328
329
311
330

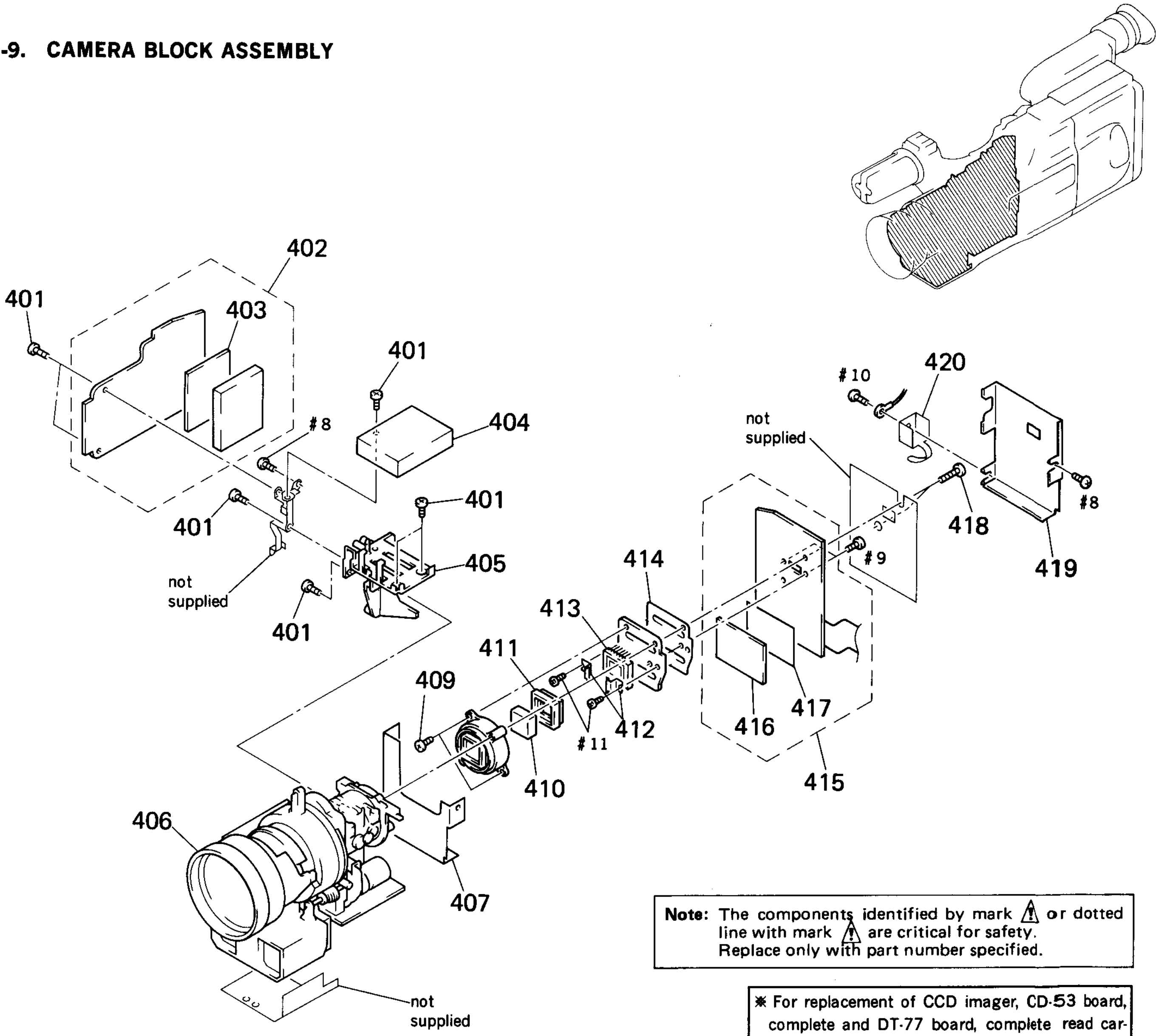
Ref. No.	Part No.	Description	Remark
301	X-3728-851-1	TABLE ASSY, REEL, S	
302	X-3728-855-1	TABLE ASSY, REEL, T	
303	3-736-414-01	SPRING, TENSION	
304	3-728-855-03	ARM, ADJUSTMENT	
305	X-3728-867-1	ARM ASSY (S), TENSION REGULATOR	
306	3-726-884-01	FLANGE, UPPER, TG2	
307	3-726-883-01	ROLLER, TG2	
308	3-726-885-01	SLEEVE, TG2	
309	3-726-882-02	FLANGE, LOWER, TG2	
310	3-726-886-01	SPRING, COMPRESSION	
311	3-741-195-01	PLATE, BLIND, RK	
312	3-726-866-01	SPRING (ST), TORSION	
313	3-726-858-01	PIN, SHAFT RETAINER	
314	3-728-849-01	BRAKE, S	
315	3-726-852-01	BRAKE, LB	
316	3-728-850-01	BRAKE, T	
317	3-726-853-01	LEVER, LB	
318	3-728-875-01	STOPPER, RK	
319	3-726-864-01	SPRING (RK), TORSION	
320	3-728-852-02	ARM, RK STOPPER	
321	A-7040-219-A	ARM BLOCK ASSY, PINCH	
322	3-669-465-00	WASHER (1.5), STOPPER	
323	3-728-808-01	SPRING, LEAF	
324	X-3728-869-1	ARM ASSY, TG7	
325	3-728-848-01	ARM, LB RELEASE	
326	1-628-061-12	FP-90 FLEXIBLE BOARD	
327	1-628-060-12	FP-89 FLEXIBLE BOARD	
328	3-321-393-11	WASHER, STOPPER	
329	X-3728-863-1	LEVER ASSY, SW	
330	3-726-829-01	WASHER, STOPPER	
331	X-3728-859-1	BAND ASSY, TENSION REGULATOR	
332	3-730-125-01	RETAINER, SW	
333	X-3728-857-1	STOPPER ASSY, TENSION REGULATOR	
334	3-732-087-31	SCREW (M1.4X1.8), SPECIAL HEAD	

5-8. MECHANICAL CHASSIS ASSEMBLY (3)


353
386
354
355
356
353
385
357
356
358
357
359
360
352
361
351
not supplied
376
369
377
383
364
371
352
384
365
360
362
360
380
363
378
372
370
379
373
360
371
374
382
366
375
368
367
360
381
368

Ref. No.	Part No.	Description	Remark
351	X-3728-862-1	CHASSIS ASSY, MECHANICAL	
352	3-732-087-31	SCREW (M1.4X1.8), SPECIAL HEAD	
353	3-726-822-01	SCREW (M1.4X2) (STEP), HEAD	
354	A-7040-204-A	COASTER (LEFT) BLOCK ASSY	
355	A-7040-215-A	COASTER (RIGHT)BLOCK ASSY(N1S)	
356	3-736-485-01	SPRING, LEAF, COSTER	
357	3-726-830-01	SCREW (M1.4X4) (THREE LOCK)	
358	X-3728-868-1	WORM ASSY	
359	3-744-109-01	GEAR, WHEEL	
360	3-726-829-01	WASHER, STOPPER	
361	3-728-842-01	LEVER, EJECT	
362	3-728-851-01	BRAKE, UL	
363	3-726-854-01	ARM, BRAKE RELEASE	
364	3-726-865-01	SPRING (LB), TORSION	
365	A-7040-225-A	GEAR BLOCK ASSY (N), LB	
366	X-3728-866-1	GEAR ASSY, RK	
367	X-3728-858-1	GEAR ASSY, RC	
368	3-321-393-11	WASHER, STOPPER	
369	X-3728-842-1	GEAR (LEFT) ASSY, DRIVE	
370	X-3728-843-1	GEAR (RIGHT) ASSY, DRIVE	
371	3-669-465-00	WASHER (1.5), STOPPER	
372	3-726-867-01	SPRING, LEAF	
373	3-701-436-21	WASHER, POLYEHTHYLENE	
374	3-726-857-03	ARM, UL	
375	3-726-856-04	GEAR, UL	
376	* 3-726-805-01	REINFORCEMENT (TT)	
377	X-3726-808-2	BRAKE ASSY, TS	
378	X-3726-805-1	GEAR ASSY, JOINT	
379	3-728-866-11	BELT (S), TIMING	
380	X-3726-813-1	PULLEY (UPPER) ASSY, MIDWAY	
381	3-741-197-01	BELT (L), TIMING	
382	3-741-196-01	PULLEY (LOWER), BELT MIDWAY	
383	X-3726-824-1	ARM ASSY, PINCH SUB	
384	3-726-895-01	SPRING	
385	X-3726-841-1	REINFORCEMENT (SS) ASSY	
386	X-3728-808-4	ROLLER ASSY (U) (SUS), GUIDE	

5-9. CAMERA BLOCK ASSEMBLY

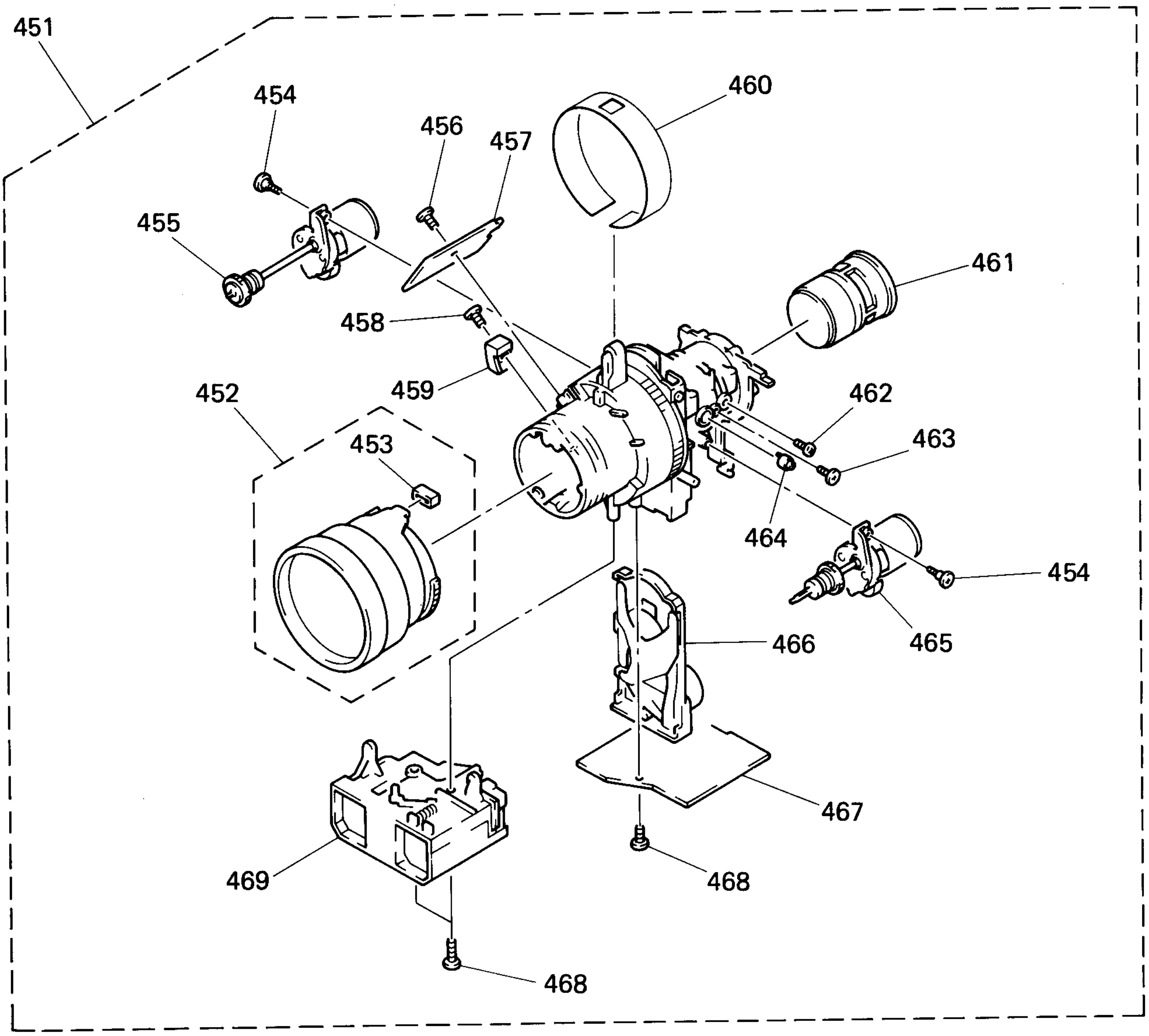

402
401
403
401
404
#8
401
401
not supplied
405
not supplied
401
#10
420
not supplied
418
#8
419
414
#9
413
411
409
412
#11
416
417
415
410
406
407
not supplied

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

✱ For replacement of CCD imager, CD-53 board, complete and DT-77 board, complete read carefully the CAUTIONS FOR REPLACEMENT OF CCD IMAGER on page 119.

Ref. No.	Part No.	Description	Remark
401	3-727-903-11	SCREW (2X5), TAPPING, +B	
402	* A-7062-798-A	VC-86 BOARD, COMPLETE	
403	A-7068-186-A	MX-10 BOARD, COMPLETE (HIC)	
404	⚠· 1-466-230-21	CONVERTER UNIT, D/D	
405	3-942-211-01	HOLDER, LITHIUM	
406	1-547-482-11	LENS, ZOOM (VCL-8508XJ)	
407	* X-3744-702-1	CASE (MAIN) ASSY, SHIELD, C	
409	3-738-519-11	SCREW (M2X3), +B	
410	1-547-381-12	FILTER BLOCK, OPTICAL	
411	* 3-725-177-01	RUBBER, SEAL	
412	* 3-725-175-01	STOPPER, CCD	
413	✱ 8-752-604-72	IC ICX039AN-2 (CCD IMAGER)	
414	* 3-725-180-01	SHEET, INSULATING, CCD HOLDER	
415	* A-7062-797-A	CD-53 BOARD, COMPLETE	
416	A-7068-173-A	DT-77 BOARD, COMPLETE (HIC)	
417	* X-3739-811-1	PLATE ASSY, SHIELD, CD	
418	3-335-640-51	SCREW (M2X16)	
419	* X-3744-763-1	LID ASSY, C SHIELD CASE	
420	* 3-943-050-01	SPRING, GROUND, CAMERA	

5-10. ZOOM LENS ASSEMBLY


451
454
456
457
460
455
461
458
452
459
462
453
463
464
454
466
465
467
469
468
468

Ref. No.	Part No.	Description	Remark
451	1-547-482-11	LENS, ZOOM (VCL-8508XJ)	
452	3-708-242-01	LENS ASSY, FOCUS	
453	3-708-243-01	RUBBER, F STOPPER	
454	3-707-447-01	SCREW, MOTOR CLAMP	
455	3-708-237-01	MOTOR ASSY, AF	
456	3-707-761-01	SCREW, SW BOARD CLAMP	
457	3-708-244-01	SW BOARD	
458	3-707-445-01	SCREW, N STOPPER CLAMP	
459	3-707-446-01	STOPPER, N	
460	3-708-236-01	SHEET, ZOOM	
461	3-708-241-01	MIRROR TUBE UNIT, RELAY	
462	3-707-455-01	SCREW, RELAY SEY	
463	3-707-454-01	SCREW	
464	3-707-453-01	ROLLER, ECCENTRIC	
465	3-708-240-01	MOTOR ASSY, PZ	
466	3-708-235-01	METER ASSY, IG	
467	3-708-239-01	AF BOARD	
468	3-707-459-01	SCREW	
469	3-708-238-01	BLOCK ASSY, AF	

SECTION 6
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- CAPACITORS
  uF: μF
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: μH
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD....

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref. No.	Part No.	Description	Remark
*	A-7062-796-A	AU-99 BOARD, COMPLETE ********************* (Ref.No 6,000 Series)	
		< CAPACITOR >	
C401	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C402	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C403	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C404	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C405	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C406	1-124-584-00	ELECT 100uF 20% 10V	
C407	1-124-584-00	ELECT 100uF 20% 10V	
C408	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C409	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C410	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
C411	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C412	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C413	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
C414	1-162-952-11	CERAMIC CHIP 82PF 5% 50V	
C415	1-164-489-11	CERAMIC CHIP 0.22uF 10% 16V	
C416	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
C417	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C418	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C419	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
C421	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C422	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C423	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C424	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C425	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C426	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C427	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C428	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	
C429	1-126-603-11	ELECT CHIP 4.7uF 20% 35V	
C430	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C431	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C432	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C433	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C434	1-124-584-00	ELECT 100uF 20% 10V	
C435	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C436	1-163-989-11	CERAMIC CHIP 0.033uF 10% 25V	
C437	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C438	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C439	1-162-965-11	CERAMIC CHIP 0.0015uF 10% 50V	
C440	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C441	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C443	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C446	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C448	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C449	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C450	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C451	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C452	1-135-151-21	TANTALUM CHIP 4.7uF 20% 4V	
C453	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C454	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	
C455	1-126-603-11	ELECT CHIP 4.7uF 20% 35V	
C456	1-126-209-11	ELECT CHIP 100uF 20% 4V	
C457	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	
C459	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C460	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C461	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C462	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C463	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C464	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C467	1-163-989-11	CERAMIC CHIP 0.033uF 10% 25V	
C468	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C470	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C473	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C475	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	

AU-99

Ref. No.	Part No.	Description			Remark
C477	1-128-013-11	ELECT CHIP	1uF	20%	50V
C478	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C479	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C480	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C481	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C482	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C483	1-164-299-11	CERAMIC CHIP	0.22uF	10%	25V
C485	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C486	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C487	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C488	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C489	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C490	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C491	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C492	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C493	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C494	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C495	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C496	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C497	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C498	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C499	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C563	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C564	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C565	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C567	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V

< CONNECTOR >

Ref. No.	Part No.	Description
CN401	1-569-775-21	PIN, CONNECTOR 5P
CN402	LS1-580-056-21	PIN, CONNECTOR 3P

< DIODE >

Ref. No.	Part No.	Description
D401	8-719-941-86	DIODE DAN202U
D402	8-719-941-86	DIODE DAN202U
D403	8-719-404-46	DIODE MA110
D404	8-719-941-86	DIODE DAN202U
D406	8-719-977-22	DIODE DTZ9.1
D408	8-719-977-22	DIODE DTZ9.1

< FILTER >

Ref. No.	Part No.	Description
FL401	1-236-837-21	FILTER, BAND PASS (1.5M)
FL402	1-236-838-21	FILTER, BAND PASS (1.7M)

< IC >

Ref. No.	Part No.	Description
IC401	8-759-823-21	IC CXA-1536Q
IC402	8-759-009-22	IC MC14094BF
IC403	8-759-823-19	IC CXA-1488R
IC404	8-759-823-19	IC CXA-1488R
IC405	8-759-300-71	IC HD14053BF
IC406	8-759-008-67	IC MC14066BF

< COIL >

Ref. No.	Part No.	Description	
L401	1-410-381-11	INDUCTOR CHIP	10uH

< TRANSISTOR >

Ref. No.	Part No.	Description	
Q401	8-729-905-12	TRANSISTOR	DTA144EU
Q402	8-729-905-18	TRANSISTOR	DTC144EU
Q403	8-729-905-12	TRANSISTOR	DTA144EU
Q404	8-729-905-23	TRANSISTOR	2SA1576-R
Q405	8-729-905-23	TRANSISTOR	2SA1576-R
Q408	8-729-907-26	TRANSISTOR	IMX1
Q409	8-729-905-35	TRANSISTOR	2SC4081-R
Q410	8-729-907-26	TRANSISTOR	IMX1
Q411	8-729-907-26	TRANSISTOR	IMX1
Q412	8-729-905-18	TRANSISTOR	DTC144EU
Q413	8-729-905-23	TRANSISTOR	2SA1576-R
Q414	8-729-905-23	TRANSISTOR	2SA1576-R
Q415	8-729-905-35	TRANSISTOR	2SC4081-R
Q416	8-729-905-23	TRANSISTOR	2SA1576-R
Q417	8-729-905-35	TRANSISTOR	2SC4081-R
Q419	8-729-905-18	TRANSISTOR	DTC144EU
Q425	8-729-905-18	TRANSISTOR	DTC144EU
Q426	8-729-905-18	TRANSISTOR	DTC144EU
Q427	8-729-905-35	TRANSISTOR	2SC4081-R
Q428	8-729-905-35	TRANSISTOR	2SC4081-R

< RESISTOR >

Ref. No.	Part No.	Description			Remark
R401	1-216-864-11	METAL CHIP	0		
R402	1-216-864-11	METAL CHIP	0		
R403	1-216-853-11	METAL CHIP	470K	5%	1/16W
R404	1-216-855-11	METAL CHIP	680K	5%	1/16W
R407	1-216-853-11	METAL CHIP	470K	5%	1/16W
R408	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R410	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R412	1-216-864-11	METAL CHIP	0		
R413	1-216-835-11	METAL CHIP	15K	5%	1/16W
R416	1-216-837-11	METAL CHIP	22K	5%	1/16W
R419	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R420	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R421	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R422	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R423	1-216-837-11	METAL CHIP	22K	5%	1/16W
R424	1-216-834-11	METAL CHIP	12K	5%	1/16W
R425	1-216-820-11	METAL CHIP	820	5%	1/16W
R426	1-216-821-11	METAL CHIP	1K	5%	1/16W
R427	1-216-821-11	METAL CHIP	1K	5%	1/16W
R428	1-216-815-11	METAL CHIP	330	5%	1/16W

Ref. No.	Part No.	Description			Remark
R429	1-216-819-11	METAL CHIP	680	5%	1/16W
R430	1-216-821-11	METAL CHIP	1K	5%	1/16W
R431	1-216-841-11	METAL CHIP	47K	5%	1/16W
R432	1-216-841-11	METAL CHIP	47K	5%	1/16W
R433	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R434	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R435	1-216-841-11	METAL CHIP	47K	5%	1/16W
R436	1-216-841-11	METAL CHIP	47K	5%	1/16W
R437	1-216-835-11	METAL CHIP	15K	5%	1/16W
R439	1-216-840-11	METAL CHIP	39K	5%	1/16W
R440	1-216-864-11	METAL CHIP	0		
R443	1-216-864-11	METAL CHIP	0		
R444	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R445	1-216-837-11	METAL CHIP	22K	5%	1/16W
R446	1-216-859-11	METAL GLAZE	1.5M	5%	1/16W
R447	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R448	1-216-839-11	METAL CHIP	33K	5%	1/16W
R449	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R450	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R451	1-216-837-11	METAL CHIP	22K	5%	1/16W
R452	1-216-835-11	METAL CHIP	15K	5%	1/16W
R454	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R455	1-216-835-11	METAL CHIP	15K	5%	1/16W
R456	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R458	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R462	1-216-839-11	METAL CHIP	33K	5%	1/16W
R463	1-216-833-11	METAL CHIP	10K	5%	1/16W
R464	1-216-835-11	METAL CHIP	15K	5%	1/16W
R466	1-216-840-11	METAL CHIP	39K	5%	1/16W
R467	1-216-864-11	METAL CHIP	0		
R468	1-216-838-11	METAL CHIP	27K	5%	1/16W
R471	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R472	1-216-864-11	METAL CHIP	0		
R473	1-216-837-11	METAL CHIP	22K	5%	1/16W
R474	1-216-859-11	METAL GLAZE	1.5M	5%	1/16W
R476	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R477	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R478	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R479	1-216-815-11	METAL CHIP	330	5%	1/16W
R480	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R484	1-216-839-11	METAL CHIP	33K	5%	1/16W
R485	1-216-833-11	METAL CHIP	10K	5%	1/16W
R488	1-216-845-11	METAL CHIP	100K	5%	1/16W
R491	1-216-810-11	METAL CHIP	120	5%	1/16W
R494	1-216-810-11	METAL CHIP	120	5%	1/16W
R496	1-216-814-11	METAL CHIP	270	5%	1/16W
R497	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R498	1-216-833-11	METAL CHIP	10K	5%	1/16W
R499	1-216-841-11	METAL CHIP	47K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R560	1-216-841-11	METAL CHIP	47K	5%	1/16W
R561	1-216-833-11	METAL CHIP	10K	5%	1/16W
R562	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R563	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R564	1-216-833-11	METAL CHIP	10K	5%	1/16W
R565	1-216-819-11	METAL CHIP	680	5%	1/16W
R567	1-216-813-11	METAL CHIP	220	5%	1/16W
R568	1-216-819-11	METAL CHIP	680	5%	1/16W
R570	1-216-813-11	METAL CHIP	220	5%	1/16W
R571	1-216-864-11	METAL CHIP	0		
R572	1-216-864-11	METAL CHIP	0		
R573	1-216-833-11	METAL CHIP	10K	5%	1/16W
R574	1-216-833-11	METAL CHIP	10K	5%	1/16W
R575	1-216-845-11	METAL CHIP	100K	5%	1/16W
R576	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R577	1-216-864-11	METAL CHIP	0		
R578	1-216-864-11	METAL CHIP	0		
R579	1-216-821-11	METAL CHIP	1K	5%	1/16W
R580	1-216-821-11	METAL CHIP	1K	5%	1/16W
R582	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R583	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R584	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R585	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R586	1-216-097-00	METAL CHIP	100K	5%	1/10W
R587	1-216-864-11	METAL CHIP	0		
R589	1-216-864-11	METAL CHIP	0		
R590	1-216-864-11	METAL CHIP	0		
R591	1-216-864-11	METAL CHIP	0		
R592	1-216-801-11	METAL CHIP	22	5%	1/16W
R762	1-216-864-11	METAL CHIP	0		
R764	1-216-864-11	METAL CHIP	0		
R768	1-216-825-11	METAL CHIP	2.2K	5%	1/16W

< VARIABLE RESISTOR >

RV401	1-238-090-11	RES, ADJ CERMET	10K
RV402	1-238-090-11	RES, ADJ CERMET	10K
RV403	1-238-089-11	RES, ADJ CERMET	4.7K
RV404	1-238-090-11	RES, ADJ CERMET	10K
RV405	1-238-090-11	RES, ADJ CERMET	10K
RV407	1-238-090-11	RES, ADJ CERMET	10K
RV408	1-238-090-11	RES, ADJ CERMET	10K

< TERMINAL >

TP401	* 1-535-622-11	PIN, TERMINAL
TP402	* 1-535-622-11	PIN, TERMINAL

< FLEXIBLE BOARD >

W401	1-634-432-11	FP-261 FLEXIBLE BOARD

Ref. No.	Part No.	Description	Remark
	* A-7071-433-A	CC-60 BOARD, COMPLETE	
		*********************	
		(Ref.No 2,000 Series)	
		< CAPACITOR >	
C901	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C902	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
		< CONNECTOR >	
CN901	1-566-529-11	CONNECTOR, FPC (ZIF) 13P	
CN902	1-566-527-11	CONNECTOR, FPC (ZIF) 11P	
		< TRANSISTOR >	
Q901	8-729-902-93	TRANSISTOR FMG4	
		< RESISTOR >	
R901	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R902	1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R905	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R906	1-216-095-00	METAL CHIP 82K 5% 1/10W	
R907	1-216-295-00	METAL CHIP 0 5% 1/10W	
		< FLEXIBLE BOARD >	
W901	1-639-031-11	FP-377 FLEXIBLE BOARD	

****

Ref. No.	Part No.	Description	Remark
	* A-7062-797-A	CD-53 BOARD, COMPLETE	
		*********************	
		(Ref.No 1,000 Series)	
	3-744-718-01	HOLDER (10), C	
		< CAPACITOR >	
C101	1-126-200-11	ELECT CHIP 10uF 20% 35V	
C102	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C104	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C105	1-126-607-11	ELECT CHIP 47uF 20% 4V	
C107	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C110	1-126-206-11	ELECT CHIP 100uF 20% 6.3V	
C111	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C112	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C113	1-128-013-11	ELECT CHIP 1uF 20% 50V	
C114	1-128-008-11	ELECT CHIP 3.3uF 20% 35V	
C115	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C121	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C122	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C123	1-135-091-00	TANTALUM CHIP 1uF 20% 16V	
C124	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C125	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C126	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C127	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C128	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C129	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C130	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C131	1-162-638-11	CERAMIC CHIP 1uF 16V	
C135	1-162-638-11	CERAMIC CHIP 1uF 16V	
C136	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C137	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C138	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C140	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C141	1-162-942-11	CERAMIC CHIP 12PF 5% 50V	
C142	1-135-145-11	TANTALUM CHIP 0.47uF 10% 25V	
C144	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C147	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C148	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C187	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C188	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C189	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	
C190	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C191	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C192	1-126-100-11	ELECT 10uF 20% 6.3V	
		< CONNECTOR >	
CN101	* 1-565-876-11	PIN, CONNECTOR (PC BOARD) 4P	
		< TRIMMER >	
CT121	1-141-424-11	CAP, ADJ	
CT122	1-141-356-11	CAP, ADJ	
		< DIODE >	
D101	8-719-404-46	DIODE MA110	
D102	8-719-404-52	DIODE MA143	
D122	8-719-404-32	DIODE MA141WA	
D123	8-719-404-46	DIODE MA110	
D124	8-719-404-32	DIODE MA141WA	
D125	8-719-949-46	DIODE 1T32	
D128	8-719-404-46	DIODE MA110	
		< HIC >	
HIC121	A-7068-173-B	DT-77F BOARD, COMPLETE (HIC)	
		< IC >	
IC121	8-752-326-08	IC CXD1159Q	

Ref. No.	Part No.	Description	Remark
		< COIL >	
L101	1-412-063-21	INDUCTOR CHIP 68uH	
L121	1-412-058-11	INDUCTOR, CHIP 10uH	
L122	1-412-058-11	INDUCTOR, CHIP 10uH	
L123	1-410-381-11	INDUCTOR CHIP 10uH	
L182	1-412-058-11	INDUCTOR, CHIP 10uH	
L183	1-412-052-21	INDUCTOR CHIP 1uH	
L184	1-412-058-11	INDUCTOR, CHIP 10uH	
		< TRANSISTOR >	
Q101	8-765-420-02	TRANSISTOR 2SK300-3	
Q102	8-729-905-35	TRANSISTOR 2SC4081-R	
Q121	8-729-402-84	TRANSISTOR XN4601	
Q122	8-729-402-78	TRANSISTOR XN6401	
Q123	8-729-402-19	TRANSISTOR XN6501	
Q125	8-729-905-35	TRANSISTOR 2SC4081-R	
Q126	8-729-402-84	TRANSISTOR XN4601	
Q129	8-729-905-23	TRANSISTOR 2SA1576-R	
Q130	8-729-905-35	TRANSISTOR 2SC4081-R	
Q131	8-729-402-84	TRANSISTOR XN4601	
Q132	8-729-402-84	TRANSISTOR XN4601	
Q133	8-729-402-84	TRANSISTOR XN4601	
Q135	8-729-402-84	TRANSISTOR XN4601	
Q136	8-729-402-45	TRANSISTOR UN5212	
		< RESISTOR >	
R101	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R102	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R103	1-216-820-11	METAL CHIP 820 5% 1/16W	
R104	1-216-809-11	METAL CHIP 100 5% 1/16W	
R105	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R108	1-216-864-11	METAL CHIP 0	
R110	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R111	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R112	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R113	1-216-864-11	METAL CHIP 0	
R114	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R115	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R116	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R117	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R118	1-216-813-11	METAL CHIP 220 5% 1/16W	
R119	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R121	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R122	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R124	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R125	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R126	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R127	1-216-820-11	METAL CHIP 820 5% 1/16W	
R128	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R129	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R130	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R131	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R132	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R133	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R136	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R138	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R139	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R140	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R141	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R142	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R143	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R148	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R149	1-216-864-11	METAL CHIP 0	
R154	1-216-864-11	METAL CHIP 0	
R155	1-216-864-11	METAL CHIP 0	
R156	1-216-809-11	METAL CHIP 100 5% 1/16W	
R157	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R158	1-216-862-11	METAL GLAZE 2.7M 5% 1/16W	
R159	1-216-809-11	METAL CHIP 100 5% 1/16W	
R160	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R161	1-216-809-11	METAL CHIP 100 5% 1/16W	
R162	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R163	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R164	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R165	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R166	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R167	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R168	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R169	1-216-864-11	METAL CHIP 0	
R171	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R173	1-216-813-11	METAL CHIP 220 5% 1/16W	
R181	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R182	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R183	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R184	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R185	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R186	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R187	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R188	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R189	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R190	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R191	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R192	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R193	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R194	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R195	1-216-821-11	METAL CHIP 1K 5% 1/16W	

Ref. No.	Part No.	Description			Remark
R196	1-216-813-11	METAL CHIP	220	5%	1/16W
R197	1-216-821-11	METAL CHIP	1K	5%	1/16W
R198	1-216-821-11	METAL CHIP	1K	5%	1/16W
R199	1-216-821-11	METAL CHIP	1K	5%	1/16W
R200	1-216-844-11	METAL CHIP	82K	5%	1/16W
R201	1-216-671-11	METAL CHIP	6.8K	0.5%	1/10W
R202	1-216-643-11	METAL CHIP	470	0.5%	1/10W
R203	1-216-681-11	METAL CHIP	18K	0.5%	1/10W
R204	1-216-671-11	METAL CHIP	6.8K	0.5%	1/10W
R205	1-216-659-11	METAL CHIP	2.2K	0.5%	1/10W
R206	1-216-681-11	METAL CHIP	18K	0.5%	1/10W
R207	1-216-841-11	METAL CHIP	47K	5%	1/16W
R208	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R209	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R210	1-216-833-11	METAL CHIP	10K	5%	1/16W
R215	1-216-842-11	METAL CHIP	56K	5%	1/16W
R216	1-216-833-11	METAL CHIP	10K	5%	1/16W
R217	1-216-833-11	METAL CHIP	10K	5%	1/16W
R218	1-216-833-11	METAL CHIP	10K	5%	1/16W
R219	1-216-833-11	METAL CHIP	10K	5%	1/16W
R220	1-216-835-11	METAL CHIP	15K	5%	1/16W
R221	1-216-840-11	METAL CHIP	39K	5%	1/16W
R222	1-216-833-11	METAL CHIP	10K	5%	1/16W
R226	1-216-864-11	METAL CHIP	0		
R229	1-216-864-11	METAL CHIP	0		
R230	1-216-833-11	METAL CHIP	10K	5%	1/16W
R231	1-216-813-11	METAL CHIP	220	5%	1/16W
R232	1-216-813-11	METAL CHIP	220	5%	1/16W
R233	1-216-841-11	METAL CHIP	47K	5%	1/16W
R234	1-216-841-11	METAL CHIP	47K	5%	1/16W

< FLEXIBLE BOARD >

W102	1-634-435-11	FP-265 FLEXIBLE BOARD

< CRYSTAL >

X121	1-579-076-11	VIBRATOR, CRYSTAL
X122	1-567-733-11	VIBRATOR, CRYSTAL

****

* A-7071-436-A FA-2 BOARD, COMPLETE
****
(Ref.No 5,000 Series)

< SWITCH >

S602	1-572-735-11	SWITCH, SLIDE (FOCUS)

****

* A-7062-799-A FD-44 BOARD, COMPLETE
****
(Ref.No 4,000 Series)

* 3-942-215-01 HOLDER, LCD

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C201	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C202	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C203	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C204	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C205	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C206	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C207	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C208	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C209	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C210	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C211	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C212	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C213	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C214	1-162-971-11	CERAMIC CHIP	0.001uF		50V
C215	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C216	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C217	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C218	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C219	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C220	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C221	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C222	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C223	1-135-215-21	TANTAL. CHIP	6.8uF	20%	16V
C224	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C230	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C231	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C300	1-135-145-11	TANTALUM CHIP	0.47uF	10%	25V
C301	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C302	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C303	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C304	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C309	1-135-145-11	TANTALUM CHIP	0.47uF	10%	25V
C310	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C311	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C312	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C313	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C332	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C333	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C334	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C335	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C336	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C337	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V

Ref. No.	Part No.	Description	Remark
C338	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C339	1-135-145-11	TANTALUM CHIP 0.47uF 10% 25V	
C340	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C341	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C342	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C343	1-162-917-11	CERAMIC CHIP 15PF 5% 50V	
C344	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C345	1-164-337-11	CERAMIC CHIP 2.2uF 16V	
C346	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C347	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C348	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C349	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C350	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C351	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C352	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C353	1-162-638-11	CERAMIC CHIP 1uF 16V	
C354	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C355	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C356	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C357	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C361	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C370	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C371	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C372	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C380	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C381	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C382	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C383	1-162-965-11	CERAMIC CHIP 0.0015uF 10% 50V	
C384	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
		< CONNECTOR >	
CN201	1-569-035-11	CONNECTOR, FPC (ZIF) 30P	
CN202	* 1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	
CN204	* 1-566-761-11	PIN, CONNECTOR (PC BOARD) 6P	
CN205	1-569-532-11	HOUSING, CONNECTOR 30P	
		< TRIMMER >	
CT201	1-141-331-11	CAP, CHIP TRIMMER	
CT301	1-141-331-11	CAP, CHIP TRIMMER	
CT302	1-141-331-11	CAP, CHIP TRIMMER	
		< DIODE >	
D201	8-719-940-45	DIODE DWA010	
D202	8-719-404-46	DIODE MA110	
D203	⚠ 8-719-938-72	DIODE SB01-05CP	
D204	8-719-420-36	DIODE MA151A	
D205	8-719-941-86	DIODE DAN202U	
D213	8-719-404-46	DIODE MA110	
D301	8-719-404-46	DIODE MA110	

Ref. No.	Part No.	Description	Remark
		< IC >	
IC201	8-759-154-86	IC uPD75316GF-121-3B9	
IC202	8-759-999-02	IC TL1596CDB	
IC203	8-759-145-63	IC uPD7564G-540	
IC205	8-759-937-54	IC S-81250HG-RD-S	
IC206	8-759-937-56	IC S-8054ALB-LM-S	
IC301	8-759-998-30	IC CF79028PG	
IC302	8-752-330-66	IC CXK58257M-10L	
IC303	8-752-039-49	IC CXA1393AN	
IC304	8-759-634-47	IC M51285BGP	
		< COIL >	
L201	1-412-058-11	INDUCTOR CHIP 10uH	
L202	1-410-393-11	INDUCTOR CHIP 100uH	
L300	1-412-058-11	INDUCTOR CHIP 10uH	
L301	1-412-187-11	INDUCTOR 18uH	
L302	1-410-377-31	INDUCTOR CHIP 4.7uH	
L310	1-410-377-31	INDUCTOR CHIP 4.7uH	
L311	1-410-393-11	INDUCTOR CHIP 100uH	
		< DISPLAY PANEL >	
ND201	1-809-336-11	DISPLAY PANEL, LIQUID CRYSTAL	
		< TRANSISTOR >	
Q201	8-729-904-20	TRANSISTOR FMA2	
Q202	8-729-905-18	TRANSISTOR DTC144EU	
Q203	8-729-905-24	TRANSISTOR 2SA1576-S	
Q204	8-729-905-15	TRANSISTOR DTC144WU	
Q205	⚠ 8-729-109-44	TRANSISTOR 2SK94	
Q206	8-729-402-78	TRANSISTOR XN6401	
Q207	8-729-402-19	TRANSISTOR XN6501	
Q208	8-729-402-78	TRANSISTOR XN6401	
Q209	8-729-403-10	TRANSISTOR XN6215	
Q210	8-729-905-XX	TRANSISTOR DTC114TU	
Q211	8-729-100-66	TRANSISTOR 2SC1623	
Q212	8-729-905-XX	TRANSISTOR DTC114TU	
Q213	8-729-905-18	TRANSISTOR DTC144EU	
Q214	8-729-905-12	TRANSISTOR DTA144EU	
Q301	8-729-925-91	TRANSISTOR DTC115EU	
Q311	8-729-905-35	TRANSISTOR 2SC4081-R	
Q312	8-729-905-35	TRANSISTOR 2SC4081-R	
Q313	8-729-905-18	TRANSISTOR DTC144EU	
Q314	8-729-905-35	TRANSISTOR 2SC4081-R	
Q315	8-729-905-18	TRANSISTOR DTC144EU	
Q317	8-729-905-24	TRANSISTOR 2SA1576-S	
Q318	8-729-905-24	TRANSISTOR 2SA1576-S	
Q319	8-729-905-35	TRANSISTOR 2SC4081-R	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

FD-44

< RESISTOR >

Ref. No.	Part No.	Description				Remark
R201	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R202	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R203	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R204	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R207	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R208	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R209	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R210	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R219	1-216-864-11	METAL CHIP	0			
R220	1-216-819-11	METAL CHIP	680	5%	1/16W	
R221 ⚠·	1-216-809-11	METAL CHIP	100	5%	1/16W	
R222	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R223	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R224	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R225	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R230	1-216-864-11	METAL CHIP	0			
R231	1-216-817-11	METAL CHIP	470	5%	1/16W	
R242	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R244	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R245	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R246	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R247	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R248	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R249	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R250	1-216-596-11	METAL GLAZE	2.7K	1%	1/10W	
R251	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R252	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R253	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R254	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R255	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R256	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R257	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R258	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R266	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R267	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R269	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R270	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R271	1-216-861-11	METAL CHIP	2.2M	5%	1/16W	
R272 ⚠·	1-216-809-11	METAL CHIP	100	5%	1/16W	
R273	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R274	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R275	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R276	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R277	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R278	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R279	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R280	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R281	1-216-852-11	METAL CHIP	390K	5%	1/16W	
R282	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R283	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R284	1-216-855-11	METAL CHIP	680K	5%	1/16W	
R285	1-216-855-11	METAL CHIP	680K	5%	1/16W	
R286	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R287	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R288	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R289	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R290	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R295	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R296	1-216-814-11	METAL CHIP	270	5%	1/16W	
R297	1-216-814-11	METAL CHIP	270	5%	1/16W	
R298	1-216-817-11	METAL CHIP	470	5%	1/16W	
R299	1-216-805-11	METAL CHIP	47	5%	1/16W	
R300	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R304	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R306	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R308	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R310	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R312	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R320	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R321	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R322	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R324	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R331	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R332	1-216-814-11	METAL CHIP	270	5%	1/16W	
R333	1-216-806-11	METAL GLAZE	56	5%	1/16W	
R334	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R335	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R336	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R338	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R339	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R340	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R341	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R342	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R343	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R344	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R345	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R346	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R347	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R348	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R349	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R350	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R351	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R352	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R356	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R357	1-216-840-11	METAL CHIP	39K	5%	1/16W	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
R358	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R359	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R360	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R361	1-216-817-11	METAL CHIP 470 5% 1/16W	
R364	1-216-815-11	METAL CHIP 330 5% 1/16W	
R365	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R366	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R370	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R371	1-216-815-11	METAL CHIP 330 5% 1/16W	
R372	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R373	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R374	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R375	1-216-814-11	METAL CHIP 270 5% 1/16W	
R376	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R377	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R378	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
		< NETWORK RESISTOR >	
RB201	1-236-412-11	NETWORK, RES 1.0K	
RB202	1-236-424-11	NETWORK, RES 10K	
RB203	1-236-424-11	NETWORK, RES 10K	
RB204	1-236-424-11	NETWORK, RES 10K	
RB205	1-236-412-11	NETWORK, RES 1.0K	
RB208	1-236-424-11	NETWORK, RES 10K	
RB209	1-236-436-11	NETWORK, RES 100K	
RB210	1-236-436-11	NETWORK, RES 100K	
RB211	1-236-412-11	NETWORK, RES 1.0K	
RB212	1-236-424-11	NETWORK, RES 10K	
RB213	1-236-424-11	NETWORK, RES 10K	
RB214	1-236-436-11	NETWORK, RES 100K	
RB215	1-236-436-11	NETWORK, RES 100K	
		< VARIABLE RESISTOR >	
RV301	1-238-089-11	RES, ADJ CERMET 4.7K	
RV302	1-238-092-11	RES, ADJ CERMET 47K	
		< SWITCH >	
S201	1-571-787-11	SWITCH, TACTILE (RESET)	
S202	1-571-787-11	SWITCH, TACTILE (TITLE 1)	
S203	1-571-787-11	SWITCH, TACTILE (TITLE 2)	
S204	1-571-787-11	SWITCH, TACTILE (MEMORY)	
S205	1-571-787-11	SWITCH, TACTILE (COLOR/MODE)	
S206	1-571-787-11	SWITCH, TACTILE (DATE)	
S207	1-571-787-11	SWITCH, TACTILE (TIME)	
S208	1-571-787-11	SWITCH, TACTILE (ZERO MEM)	
S209	1-571-787-11	SWITCH, TACTILE (WHT BAL)	
S210	1-572-319-21	SWITCH, ROTARY (CONTROL)	
S211	1-571-787-11	SWITCH, TACTILE (EXPOSURE)	

Ref. No.	Part No.	Description	Remark
S212	1-571-787-11	SWITCH, TACTILE (PROGRAM AE)	
S213	1-571-787-41	SWITCH, TACTILE (FADER)	
S215	1-571-787-11	SWITCH, TACTILE (SHUTTER SPEED)	
S216	1-571-787-11	SWITCH, TACTILE (⊠)	
S217	1-571-754-11	SWITCH, PUSH (1 KEY) (AUTO LOCK)	
		< THERMISTOR >	
TH300	1-800-200-00	THERMISTOR S-3K	
		< TERMINAL >	
TP201	* 1-535-622-11	PIN, TERMINAL	
TP202	* 1-535-622-11	PIN, TERMINAL	
		< CRYSTAL >	
X201	1-527-997-21	VIBRATOR, CRYSTAL (32.77KHz)	
X202	1-578-713-21	VIBLATOR, CERAMIC (4.19MHz)	
X203	1-577-163-21	VIBLATOR, CERAMIC (700KHz)	
X301	1-567-733-11	VIBRATOR, CRYSTAL	
X302	1-578-690-11	VIBRATOR, CERAMIC (500KHz)	

****

* A-7071-434-A FK-47 BOARD, COMPLETE
****
(Ref.No 5,000 Series)

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
CN501	1-566-542-31	CONNECTOR, FPC (NON ZIF) 10P	
		< DIODE >	
D501	8-719-940-45	DIODE MA159	
		< SWITCH >	
S501	1-571-787-11	SWITCH, TACTILE (MENU)	
S502	1-571-787-11	SWITCH, TACTILE (SLOW)	
S503	1-571-787-11	SWITCH, TACTILE (PLAY)	
S504	1-571-787-11	SWITCH, TACTILE (FRAME +)	
S505	1-571-787-11	SWITCH, TACTILE (FRAME -)	
S506	1-571-787-11	SWITCH, TACTILE (PAUSE)	
S507	1-571-787-11	SWITCH, TACTILE (EXCUTE)	
S509	1-572-283-11	SWITCH, SLIDE (POWER)	
S510	1-571-787-11	SWITCH, TACTILE (STOP)	
S511	1-571-787-11	SWITCH, TACTILE (RIGHT)	
S512	1-571-787-11	SWITCH, TACTILE (DATA SCREEN)	
S513	1-571-787-11	SWITCH, TACTILE (FF)	
S514	1-571-787-11	SWITCH, TACTILE (LEFT)	
S515	1-571-787-11	SWITCH, TACTILE (SELECT)	
S516	1-571-787-11	SWITCH, TACTILE (REW)	
S517	1-571-787-11	SWITCH, TACTILE (EDITSEARCH +)	
S518	1-571-787-11	SWITCH, TACTILE (EDITSEARCH -)	

FP-376 **FP-89** **FP-90** **FU-97**

Ref. No.	Part No.	Description	Remark
	1-639-030-11	FP-376 FLEXIBLE BOARD	
		********************	
		(Ref. No 5,000 Series)	
		< CAPACITOR >	
C601	1-126-154-11	ELECT 47uF 20% 6.3V	
		< DIODE >	
D601	8-719-812-41	LED TLR124, RED	
		< IC >	
IC601	8-741-100-63	IC SBX1619-51	
		< SWITCH >	
S601	1-554-371-51	SWITCH, TACT (REC START/STOP)	

****

Ref. No.	Part No.	Description	Remark
	1-628-060-12	FP-89 FLEXIBLE BOARD	
		********************	
		(Ref. No 5,000 Series)	
	3-728-869-02	HOLDER, SENSOR	
		< DIODE >	
D301	8-719-801-55	DIODE TLP907-0	
		< TRANSISTOR >	
Q301	8-729-906-48	TRANSISTOR EE-TP109	
		< SWITCH >	
S301	1-571-664-11	SWITCH, SLIDE (ENCODER)	
S303	1-571-099-11	SWITCH (CASSETTE DOWN)	

****

Ref. No.	Part No.	Description	Remark
	1-628-061-12	FP-90 FLEXIBLE BOARD	
		********************	
		(Ref. No 5,000 Series)	
	3-728-837-01	HOLDER, LED	
	3-728-869-02	HOLDER, SENSOR	
		< DIODE >	
D302	8-719-801-55	DIODE TLP907-0	
D303	8-719-940-81	DIODE GL-452S	
		< TRANSISTOR >	
Q302	8-729-906-48	TRANSISTOR EE-TP109	
		< SWITCH >	
S302	1-571-680-11	SWITCH, PUSE (3 KEY)	
S303	1-571-099-11	SWITCH (CASSETTE DOWN)	

****

Ref. No.	Part No.	Description	Remark
	* A-7062-793-A	FU-97 BOARD, COMPLETE	
		********************	
		(Ref. No 7,000 Series)	
		< CAPACITOR >	
C101	1-124-604-00	ELECT 330uF 20% 10V	
C102	1-128-292-11	ELECT 220uF 20% 10V	
C103	1-128-078-11	ELECT 33uF 20% 10V	
C104	1-124-584-00	ELECT 100uF 20% 10V	
C105	1-124-584-00	ELECT 100uF 20% 10V	
C106	1-127-561-11	ELECT(SOLID) 33uF 20% 10V	
C107	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C108	1-127-558-11	ELECT(SOLID) 10uF 20% 10V	
C109	1-127-558-11	ELECT(SOLID) 10uF 20% 10V	
C110	1-127-558-11	ELECT(SOLID) 10uF 20% 10V	
C111	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C112	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C113	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C114	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C115	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C116	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C117	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C118	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C119	1-163-119-00	CERAMIC CHIP 120PF 5% 50V	
C120	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C121	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C122	1-127-561-11	ELECT(SOLID) 33uF 20% 10V	
C124	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C125	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C126	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
C127	1-163-038-00	CERAMIC CHIP 0.1uF 25V	
		< CONNECTOR >	
CN101	1-566-757-11	PIN, CONNECTOR (PC BOARD) 2P	
CN102	1-569-557-11	CONNECTOR, BOARD TO BOARD 20P	
CN103	1-566-757-11	PIN, CONNECTOR (PC BOARD) 2P	
		< DIODE >	
D101	8-719-981-59	DIODE FC805	
D102	8-719-981-56	DIODE SB05W05C-P	
D103	8-719-922-21	DIODE AR2222S	

Ref. No.	Part No.	Description	Remark
		< IC >	
IC101	8-759-035-98	IC MC141600FU	
		< JACK >	
J101	1-537-241-11	TERMINAL BOARD (BATTERY)	
		< COIL >	
L101	1-410-337-11	INDUCTOR 1uH	
L102	1-410-337-11	INDUCTOR 1uH	
L103	1-410-337-11	INDUCTOR 1uH	
L104	1-424-104-11	COIL, CHOKE 10uH	
L105	1-424-104-11	COIL, CHOKE 10uH	
L106	1-424-106-11	COIL, CHOKE 47uH	
L107	1-424-105-11	COIL, CHOKE 22uH	
L108	1-424-106-11	COIL, CHOKE 47uH	
L110	1-412-029-11	INDUCTOR, CHIP 10uH	
L111	1-412-029-11	INDUCTOR, CHIP 10uH	
L112	1-412-029-11	INDUCTOR, CHIP 10uH	
L113	1-412-027-11	INDUCTOR, CHIP 2.2uH	
		< IC LINK >	
PS101 ⚠·	1-532-840-21	LINK, IC 1.25A	
PS102 ⚠·	1-532-841-21	LINK, IC 1.6A	
PS103 ⚠·	1-532-840-21	LINK, IC 1.25A	
		< TRANSISTOR >	
Q101	8-729-805-25	TRANSISTOR 2SB1121	
Q102	8-729-822-60	TRANSISTOR 2SB1302	
Q103	8-729-805-25	TRANSISTOR 2SB1121	
		< RESISTOR >	
R101	1-216-085-00	METAL CHIP 33K 5%	1/10W
R102	1-216-093-00	METAL CHIP 68K 5%	1/10W
R103	1-216-081-00	METAL CHIP 22K 5%	1/10W
R104	1-216-033-00	METAL CHIP 220 5%	1/10W
R105	1-216-081-00	METAL CHIP 22K 5%	1/10W
R106	1-216-077-00	METAL CHIP 15K 5%	1/10W
R107	1-216-033-00	METAL CHIP 220 5%	1/10W
R108	1-216-081-00	METAL CHIP 22K 5%	1/10W
R109	1-216-033-00	METAL CHIP 220 5%	1/10W
R110	1-216-089-00	METAL CHIP 47K 5%	1/10W
R111	1-216-089-00	METAL CHIP 47K 5%	1/10W
R112	1-216-069-00	METAL CHIP 6.8K 5%	1/10W
R113	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
R114	1-216-073-00	METAL CHIP 10K 5%	1/10W
R115	1-216-081-00	METAL CHIP 22K 5%	1/10W
R116	1-216-081-00	METAL CHIP 22K 5%	1/10W

Ref. No.	Part No.	Description	Remark
R117	1-216-089-00	METAL CHIP 47K 5%	1/10W
R118	1-216-093-00	METAL CHIP 68K 5%	1/10W
R119	1-216-041-00	METAL CHIP 470 5%	1/10W
		< VARIABLE RESISTOR >	
RV101	1-238-088-11	RES, ADJ, CERMET 2.2K	
RV102	1-238-092-11	RES, ADJ, CERMET 47K	
		< SWITCH >	
S101	1-572-284-11	SWITCH, SLIDE (EJECT)	

`**************************************************************`

* A-7071-435-A LI-33 BOARD, COMPLETE

`********************`

(Ref. No 5,000 Series)

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
CN603	1-580-057-11	PIN, CONNECTOR 4P	
		< JACK >	
J603	1-550-104-11	HOLDER, BATTERY	

`**************************************************************`

* A-7062-800-A MC-63 BOARD, COMPLETE

`********************`

(Ref. No 6,000 Series)

Ref. No.	Part No.	Description	Remark
		< CAPACITOR >	
C801	1-126-205-11	ELECT CHIP 47uF 20%	6.3V
C802	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V
C803	1-162-638-11	CERAMIC CHIP 1uF	16V
C804	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V
C805	1-163-989-11	CERAMIC CHIP 0.033uF 10%	25V
C806	1-162-962-11	CERAMIC CHIP 470PF 10%	50V
C807	1-163-037-11	CERAMIC CHIP 0.022uF 10%	25V
C808	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V
C809	1-162-638-11	CERAMIC CHIP 1uF	16V
C810	1-164-633-11	CERAMIC CHIP 0.1uF 10%	25V
C811	1-163-989-11	CERAMIC CHIP 0.033uF 10%	25V
C812	1-163-037-11	CERAMIC CHIP 0.022uF 10%	25V
C813	1-162-962-11	CERAMIC CHIP 470PF 10%	50V
C815	1-126-206-11	ELECT CHIP 100uF 20%	6.3V
C816	1-162-953-11	CERAMIC CHIP 100PF 5%	50V
C817	1-162-953-11	CERAMIC CHIP 100PF 5%	50V
C818	1-162-953-11	CERAMIC CHIP 100PF 5%	50V
C819	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V
C820	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V
C821	1-162-953-11	CERAMIC CHIP 100PF 5%	50V

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
C822	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C823	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C824	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C825	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C826	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C827	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C828	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C829	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V

< CONNECTOR >

CN802	* 1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P

< DIODE >

D801	8-719-404-46	DIODE MA110
D802	8-719-977-22	DIODE DTZ9.1

< IC >

IC801	8-759-823-42	IC LA7470M

< JACK >

J801	1-507-899-00	JACK (SMALL TYPE) (EXT MIC)
J802	1-563-454-11	JACK, MINIATURE (DC OUT)

< COIL >

L801	1-410-369-11	INDUCTOR CHIP	1uH
L802	1-410-369-11	INDUCTOR CHIP	1uH
L803	1-410-369-11	INDUCTOR CHIP	1uH
L804	1-410-369-11	INDUCTOR CHIP	1uH
L805	1-410-369-11	INDUCTOR CHIP	1uH

< TRANSISTOR >

Q801	8-729-905-18	TRANSISTOR	DTC144EU
Q802	8-729-905-35	TRANSISTOR	2SC4081-R

< RESISTOR >

R801	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R802	1-216-819-11	METAL CHIP	680	5%	1/16W
R803	1-216-835-11	METAL CHIP	15K	5%	1/16W
R804	1-216-837-11	METAL CHIP	22K	5%	1/16W
R805	1-216-836-11	METAL CHIP	18K	5%	1/16W
R806	1-216-833-11	METAL CHIP	10K	5%	1/16W
R807	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R808	1-216-835-11	METAL CHIP	15K	5%	1/16W
R809	1-216-819-11	METAL CHIP	680	5%	1/16W
R810	1-216-837-11	METAL CHIP	22K	5%	1/16W
R811	1-216-836-11	METAL CHIP	18K	5%	1/16W
R812	1-216-837-11	METAL CHIP	22K	5%	1/16W
R815	1-216-841-11	METAL CHIP	47K	5%	1/16W
R816	1-216-841-11	METAL CHIP	47K	5%	1/16W
R818	1-216-833-11	METAL CHIP	10K	5%	1/16W
R819	1-216-833-11	METAL CHIP	10K	5%	1/16W
R820	1-216-834-11	METAL CHIP	12K	5%	1/16W
R821	1-216-834-11	METAL CHIP	12K	5%	1/16W
R822	1-216-835-11	METAL CHIP	15K	5%	1/16W
R823	1-216-819-11	METAL CHIP	680	5%	1/16W
R824	1-216-835-11	METAL CHIP	15K	5%	1/16W
R825	1-216-819-11	METAL CHIP	680	5%	1/16W

< SWITCH >

S801	1-553-977-00	SWITCH, SLIDE (BUILT IN MIC)

****

* A-7062-794-A SS-134 BOARD, COMPLETE

****

(Ref.No 2,000 Series)

* 1-535-622-11	PIN, TERMINAL
3-719-381-01	SCREW (M2X4)
* 3-744-790-01	LID, REAR, RP SHIELD
* 3-941-127-01	CASE (2), RP SHIELD

< CAPACITOR >

C001	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C002	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C003	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C004	1-126-602-11	ELECT CHIP	3.3uF	20%	50V
C005	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C006	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C010	1-124-242-00	ELECT	33uF	20%	25V
C011	1-126-163-11	ELECT	4.7uF	20%	50V
C012	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C013	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C014	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C015	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C016	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C018	1-136-718-11	FILM, CHIP	0.1uF	5%	25V
C019	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C020	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C021	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C022	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C023	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C025	1-128-006-11	ELECT CHIP	4.7uF	20%	25V
C026	1-164-330-21	CERAMIC CHIP	0.22uF	10%	16V
C027	1-164-330-21	CERAMIC CHIP	0.22uF	10%	16V
C028	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C030	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C031	1-135-216-11	TANTALUM CHIP	10uF	20%	10V

Ref. No.	Part No.	Description			Remark
C032	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C033	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C034	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C035	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C036	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C037	1-162-638-11	CERAMIC CHIP	1uF		16V
C038	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C039	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C041	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C044	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C045	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C046	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C048	1-128-004-11	ELECT CHIP	10uF	20%	16V
C101	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C103	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C105	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C106	1-124-779-00	ELECT CHIP	10uF	20%	16V
C110	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C111	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C112	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C113	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C114	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C115	1-162-997-11	CERAMIC CHIP	10PF	0.5PF	50V
C116	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C118	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C119	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C150	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C151	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C152	1-128-004-11	ELECT CHIP	10uF	20%	16V
C153	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C154	1-128-006-11	ELECT CHIP	4.7uF	20%	25V
C155	1-164-634-11	CERAMIC CHIP	1uF		16V
C156	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C157	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C158	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C159	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C160	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C161	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C162	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C163	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C165	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C166	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C167	1-162-638-11	CERAMIC CHIP	1uF		16V
C168	1-162-638-11	CERAMIC CHIP	1uF		16V
C169	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C170	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C171	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C172	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C173	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C175	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C176	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C177	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C178	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C180	1-164-634-11	CERAMIC CHIP	1uF		16V
C183	1-128-004-11	ELECT CHIP	10uF	20%	16V
C201	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C208	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C211	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C212	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C213	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C214	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C215	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C216	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C219	1-162-940-11	CERAMIC CHIP	9PF	0.5PF	50V
C222	1-162-938-11	CERAMIC CHIP	7PF	0.5PF	50V
C224	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C225	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C226	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C227	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C228	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C229	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C230	1-128-004-11	ELECT CHIP	10uF	20%	16V
C231	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C232	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C233	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C234	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C235	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C236	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C237	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C238	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C240	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C241	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C242	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C243	1-162-948-11	CERAMIC CHIP	39PF	5%	50V
C244	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C245	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C246	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C249	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C250	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C252	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C255	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C256	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C257	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C258	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C261	1-162-938-11	CERAMIC CHIP	7PF	0.5PF	50V
C262	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C263	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C264	1-162-950-11	CERAMIC CHIP	56PF	5%	50V

SS-134

Ref. No.	Part No.	Description			Remark
C265	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C267	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C268	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C269	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C270	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C271	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C272	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C273	1-128-004-11	ELECT CHIP	10uF	20%	16V
C274	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C275	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C276	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C277	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C278	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C279	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C280	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C281	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C282	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C283	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C284	1-162-936-11	CERAMIC CHIP	5PF	0.25PF	50V
C285	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C286	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C288	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C289	1-128-004-11	ELECT CHIP	10uF	20%	16V
C290	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C291	1-128-004-11	ELECT CHIP	10uF	20%	16V
C292	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C293	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C294	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C295	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C296	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C297	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C298	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C299	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C300	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C301	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C302	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C303	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C304	1-128-004-11	ELECT CHIP	10uF	20%	16V
C305	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C308	1-128-011-11	ELECT CHIP	0.33uF	20%	50V
C309	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C310	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C317	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C318	1-128-004-11	ELECT CHIP	10uF	20%	16V
C319	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C320	1-128-004-11	ELECT CHIP	10uF	20%	16V
C321	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V

Ref. No.	Part No.	Description			Remark
C322	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C323	1-128-008-11	ELECT CHIP	3.3uF	20%	35V
C324	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C329	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C330	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C332	1-126-425-11	ELECT	10uF	20%	10V
C333	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C334	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C335	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C336	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C337	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C338	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C340	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C341	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C342	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C345	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C346	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C347	1-162-943-11	CERAMIC CHIP	15PF	5%	50V

< CONNECTOR >

Ref. No.	Part No.	Description
CN003	1-569-558-11	CONNECTOR, BOARD TO BOARD 20P
CN004	1-565-878-11	PIN, CONNECTOR (PC BOARD) 6P
CN005	1-569-532-11	HOUSING, CONNECTOR 30P
CN007	1-566-531-11	CONNECTOR, FPC (ZIF) 15P
CN200	* 1-566-184-11	PIN, CONNECTOR (PC BOARD) 5P

< TRIMMER >

Ref. No.	Part No.	Description
CT101	1-141-368-11	CAP, CHIP TRIMMER
CT102	1-141-368-11	CAP, CHIP TRIMMER

< DIODE >

Ref. No.	Part No.	Description	
D001	8-719-941-86	DIODE	DAN202U
D002	8-719-404-46	DIODE	MA110
D101	8-719-949-46	DIODE	1T32
D202	8-719-941-86	DIODE	DAN202U
D203	8-719-941-86	DIODE	DAN202U
D205	8-719-404-46	DIODE	MA110
D208	8-719-941-86	DIODE	DAN202U
D210	8-719-941-86	DIODE	DAN202U
D211	8-719-941-86	DIODE	DAN202U

< HIC >

Ref. No.	Part No.	Description
HIC201	A-7068-183-A	HR-10 BOARD, COMPLETE (HIC)

< IC >

Ref. No.	Part No.	Description	
IC001	8-752-830-81	IC	CXP80116-837Q
IC003	8-759-998-98	IC	LM358D
IC004	8-759-148-05	IC	CXA8010M

Ref. No.	Part No.	Description	Remark
IC005	8-759-823-65	IC MCD002AM	
IC006	8-759-990-55	IC CXA8006M	
IC007	8-759-008-95	IC MC14028BF	
IC008	8-759-748-72	IC BR93C46F	
IC101	8-759-970-80	IC MB673198U	
IC102	8-759-153-41	IC uPD6451AGT-611-E1	
IC104	8-759-234-20	IC TC7S08F	
IC150	8-752-035-48	IC CXA1204Q	
IC201	8-759-012-00	IC MC10H116M	
IC202	8-759-998-92	IC LM393D	
IC204	8-759-998-32	IC CXD2107M	
IC205	8-759-148-49	IC CXA1443N	

< COIL >

Ref. No.	Part No.	Description	Remark
L001	1-412-058-11	INDUCTOR, CHIP 10uH	
L101	1-410-388-21	INDUCTOR, CHIP 39uH	
L102	1-410-393-11	INDUCTOR, CHIP 100uH	
L103	1-408-797-11	INDUCTOR, CHIP 470uH	
L150	1-412-058-11	INDUCTOR, CHIP 10uH	
L151	1-408-795-21	INDUCTOR, CHIP 330uH	
L152	1-412-058-11	INDUCTOR, CHIP 10uH	
L201	1-410-389-31	INDUCTOR, CHIP 47uH	
L205	1-410-384-31	INDUCTOR, CHIP 18uH	
L206	1-410-384-31	INDUCTOR, CHIP 18uH	
L207	1-410-381-11	INDUCTOR, CHIP 10uH	
L208	1-408-793-21	INDUCTOR, CHIP 220uH	
L209	1-408-795-21	INDUCTOR, CHIP 330uH	
L210	1-410-167-41	INDUCTOR, CHIP 820uH	
L211	1-410-387-11	INDUCTOR, CHIP 33uH	
L212	1-410-657-21	INDUCTOR, CHIP 180uH	
L214	1-410-387-11	INDUCTOR, CHIP 33uH	
L215	1-410-374-11	INDUCTOR, CHIP 2.7uH	
L216	1-410-381-11	INDUCTOR, CHIP 10uH	
L217	1-410-380-31	INDUCTOR, CHIP 8.2uH	
L218	1-410-379-21	INDUCTOR, CHIP 6.8uH	
L221	1-408-791-00	INDUCTOR, CHIP 150uH	
L222	1-408-795-21	INDUCTOR, CHIP 330uH	
L224	1-410-380-31	INDUCTOR, CHIP 8.2uH	
L225	1-412-058-11	INDUCTOR, CHIP 10uH	
L226	1-410-380-31	INDUCTOR, CHIP 8.2uH	
L227	1-412-058-11	INDUCTOR, CHIP 10uH	
L228	1-410-379-21	INDUCTOR, CHIP 6.8uH	
L229	1-410-382-31	INDUCTOR, CHIP 12uH	
L230	1-410-657-21	INDUCTOR, CHIP 180uH	
L231	1-412-058-11	INDUCTOR, CHIP 10uH	
L232	1-410-386-11	INDUCTOR, CHIP 27uH	
L233	1-410-381-11	INDUCTOR, CHIP 10uH	
L234	1-216-296-00	METAL CHIP 0 5% 1/8W	
L235	1-412-058-11	INDUCTOR, CHIP 10uH	
L236	1-412-058-11	INDUCTOR, CHIP 10uH	

< IC LINK >

Ref. No.	Part No.	Description	Remark
PS101 ⚠	1-532-605-00	LINK, IC 0.4A (ICP-N10)	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q001	8-729-907-00	TRANSISTOR DTC114EU	
Q002	8-729-905-12	TRANSISTOR DTA144EU	
Q003	8-729-905-18	TRANSISTOR DTC144EU	
Q004	8-729-820-47	TRANSISTOR 2SB1202FAT	
Q005	8-729-905-35	TRANSISTOR 2SC4081-R	
Q007	8-729-905-35	TRANSISTOR 2SC4081-R	
Q008	8-729-905-35	TRANSISTOR 2SC4081-R	
Q009	8-729-905-35	TRANSISTOR 2SC4081-R	
Q010	8-729-907-03	TRANSISTOR FMG5	
Q011	8-729-905-18	TRANSISTOR DTC144EU	
Q012	8-729-905-18	TRANSISTOR DTC144EU	
Q014	8-729-822-48	TRANSISTOR FC101	
Q017	8-729-907-03	TRANSISTOR FMG5	
Q018	8-729-905-18	TRANSISTOR DTC144EU	
Q023	8-729-921-08	TRANSISTOR DTC144TU	
Q150	8-729-905-23	TRANSISTOR 2SA1576-R	
Q151	8-729-905-18	TRANSISTOR DTC144EU	
Q152	8-729-905-35	TRANSISTOR 2SC4081-R	
Q153	8-729-905-23	TRANSISTOR 2SA1576-R	
Q202	8-729-905-35	TRANSISTOR 2SC4081-R	
Q203	8-729-905-35	TRANSISTOR 2SC4081-R	
Q213	8-729-216-22	TRANSISTOR 2SA1162G	
Q214	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q215	8-729-216-22	TRANSISTOR 2SA1162G	
Q217	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q218	8-729-905-35	TRANSISTOR 2SC4081-R	
Q219	8-729-905-35	TRANSISTOR 2SC4081-R	
Q221	8-729-905-35	TRANSISTOR 2SC4081-R	
Q222	8-729-907-00	TRANSISTOR DTC114EU	
Q223	8-729-905-35	TRANSISTOR 2SC4081-R	
Q224	8-729-904-07	TRANSISTOR FMG2	
Q225	8-729-905-45	TRANSISTOR DTA143EU	
Q227	8-729-905-35	TRANSISTOR 2SC4081-R	
Q229	8-729-141-48	TRANSISTOR 2SB624-BV345	
Q230	8-729-141-48	TRANSISTOR 2SB624-BV345	
Q231	8-729-905-18	TRANSISTOR DTC144EU	
Q232	8-729-905-18	TRANSISTOR DTC144EU	
Q233	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q234	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q238	8-729-117-31	TRANSISTOR 2SC4177-L5	
Q239	8-729-905-18	TRANSISTOR DTC144EU	
Q240	8-729-905-18	TRANSISTOR DTC144EU	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

SS-134

Ref. No.	Part No.	Description			Remark
Q242	8-729-117-31	TRANSISTOR	2SC4177-L5		
Q243	8-729-905-18	TRANSISTOR	DTC144EU		
Q244	8-729-140-63	TRANSISTOR	2SA1611-M5		
Q245	8-729-117-31	TRANSISTOR	2SC4177-L5		
Q246	8-729-905-18	TRANSISTOR	DTC144EU		
Q247	8-729-905-35	TRANSISTOR	2SC4081-R		
Q248	8-729-903-10	TRANSISTOR	FMW1		
Q249	8-729-905-18	TRANSISTOR	DTC144EU		
Q250	8-729-905-12	TRANSISTOR	DTA144EU		
Q251	8-729-905-35	TRANSISTOR	2SC4081-R		
Q252	8-729-102-07	TRANSISTOR	2SC2223-F13		
Q254	8-729-905-35	TRANSISTOR	2SC4081-R		
Q255	8-729-904-07	TRANSISTOR	FMG2		
Q256	8-729-905-12	TRANSISTOR	DTA144EU		
Q257	8-729-905-18	TRANSISTOR	DTC144EU		
Q258	8-729-903-10	TRANSISTOR	FMW1		
Q259	8-729-905-35	TRANSISTOR	2SC4081-R		
Q260	8-729-905-35	TRANSISTOR	2SC4081-R		
Q261	8-729-905-23	TRANSISTOR	2SA1576-R		
Q262	8-729-905-23	TRANSISTOR	2SA1576-R		
Q263	8-729-907-26	TRANSISTOR	IMX1		
Q265	8-729-905-35	TRANSISTOR	2SC4081-R		
Q266	8-729-905-35	TRANSISTOR	2SC4081-R		
Q267	8-729-905-35	TRANSISTOR	2SC4081-R		
Q268	8-729-905-23	TRANSISTOR	2SA1576-R		
Q269	8-729-907-26	TRANSISTOR	IMX1		
Q270	8-729-905-12	TRANSISTOR	DTA144EU		
Q272	8-729-922-94	TRANSISTOR	DTC143TU		
Q273	8-729-141-48	TRANSISTOR	2SB624-BV345		
Q277	8-729-905-35	TRANSISTOR	2SC4081-R		
Q278	8-729-905-35	TRANSISTOR	2SC4081-R		
Q279	8-729-905-18	TRANSISTOR	DTC144EU		
Q280	8-729-905-35	TRANSISTOR	2SC4081-R		
Q291	8-729-907-26	TRANSISTOR	IMX1		
Q295	8-729-905-35	TRANSISTOR	2SC4081-R		
		< RESISTOR >			
R001	1-216-845-11	METAL CHIP	100K	5%	1/16W
R002	1-216-845-11	METAL CHIP	100K	5%	1/16W
R003	1-216-845-11	METAL CHIP	100K	5%	1/16W
R004	1-216-845-11	METAL CHIP	100K	5%	1/16W
R005	1-216-845-11	METAL CHIP	100K	5%	1/16W
R006	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R007	1-216-845-11	METAL CHIP	100K	5%	1/16W
R008	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R009	1-216-818-11	METAL CHIP	560	5%	1/16W
R010	1-216-833-11	METAL CHIP	10K	5%	1/16W
R011	1-216-833-11	METAL CHIP	10K	5%	1/16W
R012	1-216-821-11	METAL CHIP	1K	5%	1/16W
R013	1-216-864-11	METAL CHIP	0		
R014	1-216-851-11	METAL CHIP	330K	5%	1/16W
R015	1-216-841-11	METAL CHIP	47K	5%	1/16W
R016	1-216-833-11	METAL CHIP	10K	5%	1/16W
R017	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R018	1-216-850-11	METAL CHIP	270K	5%	1/16W
R019	1-216-851-11	METAL CHIP	330K	5%	1/16W
R021	1-216-833-11	METAL CHIP	10K	5%	1/16W
R022	1-216-025-00	METAL CHIP	100	5%	1/10W
R023	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R024	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R025	1-216-837-11	METAL CHIP	22K	5%	1/16W
R029	1-216-833-11	METAL CHIP	10K	5%	1/16W
R030	1-216-833-11	METAL CHIP	10K	5%	1/16W
R031	1-216-821-11	METAL CHIP	1K	5%	1/16W
R032	1-216-037-00	METAL CHIP	330	5%	1/10W
R033	1-216-821-11	METAL CHIP	1K	5%	1/16W
R034	1-216-845-11	METAL CHIP	100K	5%	1/16W
R035	1-216-097-00	METAL CHIP	100K	5%	1/10W
R036	1-216-845-11	METAL CHIP	100K	5%	1/16W
R037	1-216-097-00	METAL CHIP	100K	5%	1/10W
R038	1-216-833-11	METAL CHIP	10K	5%	1/16W
R039	1-216-833-11	METAL CHIP	10K	5%	1/16W
R040	1-216-833-11	METAL CHIP	10K	5%	1/16W
R041	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R042	1-216-864-11	METAL CHIP	0		
R043	1-217-671-11	METAL CHIP	1	5%	1/10W
R044	1-217-671-11	METAL CHIP	1	5%	1/10W
R045	1-217-671-11	METAL CHIP	1	5%	1/10W
R046	1-217-671-11	METAL CHIP	1	5%	1/10W
R049	1-216-841-11	METAL CHIP	47K	5%	1/16W
R050	1-216-835-11	METAL CHIP	15K	5%	1/16W
R051	1-216-846-11	METAL CHIP	120K	5%	1/16W
R053	1-216-833-11	METAL CHIP	10K	5%	1/16W
R054	1-216-838-11	METAL CHIP	27K	5%	1/16W
R055	1-216-838-11	METAL CHIP	27K	5%	1/16W
R056	1-216-838-11	METAL CHIP	27K	5%	1/16W
R057	1-216-336-11	METAL CHIP	47K	1%	1/10W
R058	1-216-336-11	METAL CHIP	47K	1%	1/10W
R059	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R060	1-216-845-11	METAL CHIP	100K	5%	1/16W
R061	1-216-833-11	METAL CHIP	10K	5%	1/16W
R063	1-216-037-00	METAL CHIP	330	5%	1/10W
R066	1-216-857-11	METAL CHIP	1M	5%	1/16W
R068	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R070	1-216-845-11	METAL CHIP	100K	5%	1/16W
R073	1-216-829-11	METAL CHIP	4.7K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R074	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R075	1-216-839-11	METAL CHIP	33K	5%	1/16W
R076	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R077	1-216-837-11	METAL CHIP	22K	5%	1/16W
R078	1-216-821-11	METAL CHIP	1K	5%	1/16W
R080	1-216-837-11	METAL CHIP	22K	5%	1/16W
R081	1-216-864-11	METAL CHIP	0		
R082	1-216-833-11	METAL CHIP	10K	5%	1/16W
R083	1-216-833-11	METAL CHIP	10K	5%	1/16W
R084	1-216-833-11	METAL CHIP	10K	5%	1/16W
R085	1-216-833-11	METAL CHIP	10K	5%	1/16W
R086	1-216-833-11	METAL CHIP	10K	5%	1/16W
R087	1-216-833-11	METAL CHIP	10K	5%	1/16W
R088	1-216-833-11	METAL CHIP	10K	5%	1/16W
R089	1-216-833-11	METAL CHIP	10K	5%	1/16W
R090	1-216-833-11	METAL CHIP	10K	5%	1/16W
R095	1-216-821-11	METAL CHIP	1K	5%	1/16W
R097	1-216-833-11	METAL CHIP	10K	5%	1/16W
R098	1-216-833-11	METAL CHIP	10K	5%	1/16W
R099	1-216-845-11	METAL CHIP	100K	5%	1/16W
R100	1-216-843-11	METAL CHIP	68K	5%	1/16W
R105	1-216-821-11	METAL CHIP	1K	5%	1/16W
R106	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R107	1-216-833-11	METAL CHIP	10K	5%	1/16W
R108	1-216-821-11	METAL CHIP	1K	5%	1/16W
R109	1-216-821-11	METAL CHIP	1K	5%	1/16W
R110	1-216-821-11	METAL CHIP	1K	5%	1/16W
R111	1-216-821-11	METAL CHIP	1K	5%	1/16W
R112	1-216-821-11	METAL CHIP	1K	5%	1/16W
R113	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R114	1-216-864-11	METAL CHIP	0		
R120	1-216-833-11	METAL CHIP	10K	5%	1/16W
R121	1-216-845-11	METAL CHIP	100K	5%	1/16W
R122	1-216-845-11	METAL CHIP	100K	5%	1/16W
R123	1-216-839-11	METAL CHIP	33K	5%	1/16W
R124	1-216-845-11	METAL CHIP	100K	5%	1/16W
R125	1-216-838-11	METAL CHIP	27K	5%	1/16W
R127	1-216-833-11	METAL CHIP	10K	5%	1/16W
R129	1-216-864-11	METAL CHIP	0		
R130	1-216-842-11	METAL CHIP	56K	5%	1/16W
R131	1-216-833-11	METAL CHIP	10K	5%	1/16W
R132	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R133	1-216-833-11	METAL CHIP	10K	5%	1/16W
R134	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R136	1-216-864-11	METAL CHIP	0		
R137	1-216-857-11	METAL CHIP	1M	5%	1/16W
R144	1-216-841-11	METAL CHIP	47K	5%	1/16W
R145	1-216-841-11	METAL CHIP	47K	5%	1/16W
R147	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R148	1-216-837-11	METAL CHIP	22K	5%	1/16W
R150	1-216-857-11	METAL CHIP	1M	5%	1/16W
R151	1-216-820-11	METAL CHIP	820	5%	1/16W
R152	1-216-817-11	METAL CHIP	470	5%	1/16W
R153	1-216-817-11	METAL CHIP	470	5%	1/16W
R154	1-216-839-11	METAL CHIP	33K	5%	1/16W
R155	1-216-818-11	METAL CHIP	560	5%	1/16W
R156	1-216-814-11	METAL CHIP	270	5%	1/16W
R157	1-216-840-11	METAL CHIP	39K	5%	1/16W
R158	1-216-812-11	METAL CHIP	180	5%	1/16W
R161	1-216-841-11	METAL CHIP	47K	5%	1/16W
R162	1-216-835-11	METAL CHIP	15K	5%	1/16W
R163	1-216-837-11	METAL CHIP	22K	5%	1/16W
R164	1-216-837-11	METAL CHIP	22K	5%	1/16W
R165	1-216-833-11	METAL CHIP	10K	5%	1/16W
R166	1-216-833-11	METAL CHIP	10K	5%	1/16W
R167	1-216-837-11	METAL CHIP	22K	5%	1/16W
R168	1-216-833-11	METAL CHIP	10K	5%	1/16W
R169	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R170	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R171	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R172	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R173	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R174	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R175	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R176	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R178	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R179	1-216-841-11	METAL CHIP	47K	5%	1/16W
R180	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R184	1-216-821-11	METAL CHIP	1K	5%	1/16W
R185	1-216-833-11	METAL CHIP	10K	5%	1/16W
R186	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R188	1-216-864-11	METAL CHIP	0		
R190	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R193	1-216-833-11	METAL CHIP	10K	5%	1/16W
R206	1-216-807-11	METAL CHIP	68	5%	1/16W
R207	1-216-821-11	METAL CHIP	1K	5%	1/16W
R208	1-216-821-11	METAL CHIP	1K	5%	1/16W
R210	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R216	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R228	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R229	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R230	1-216-805-11	METAL CHIP	47	5%	1/16W
R231	1-216-805-11	METAL CHIP	47	5%	1/16W
R232	1-216-818-11	METAL CHIP	560	5%	1/16W
R233	1-216-814-11	METAL CHIP	270	5%	1/16W
R234	1-216-813-11	METAL CHIP	220	5%	1/16W
R235	1-216-837-11	METAL CHIP	22K	5%	1/16W
R236	1-216-839-11	METAL CHIP	33K	5%	1/16W

SS-134

Ref. No.	Part No.	Description			Remark
R237	1-216-821-11	METAL CHIP	1K	5%	1/16W
R238	1-216-811-11	METAL CHIP	150	5%	1/16W
R239	1-216-833-11	METAL CHIP	10K	5%	1/16W
R240	1-216-833-11	METAL CHIP	10K	5%	1/16W
R243	1-216-841-11	METAL CHIP	47K	5%	1/16W
R244	1-216-833-11	METAL CHIP	10K	5%	1/16W
R245	1-216-833-11	METAL CHIP	10K	5%	1/16W
R246	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R247	1-216-816-11	METAL CHIP	390	5%	1/16W
R248	1-216-812-11	METAL CHIP	180	5%	1/16W
R249	1-216-836-11	METAL CHIP	18K	5%	1/16W
R250	1-216-837-11	METAL CHIP	22K	5%	1/16W
R251	1-216-817-11	METAL CHIP	470	5%	1/16W
R252	1-216-817-11	METAL CHIP	470	5%	1/16W
R254	1-216-821-11	METAL CHIP	1K	5%	1/16W
R255	1-216-817-11	METAL CHIP	470	5%	1/16W
R256	1-216-837-11	METAL CHIP	22K	5%	1/16W
R257	1-216-837-11	METAL CHIP	22K	5%	1/16W
R258	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R259	1-216-817-11	METAL CHIP	470	5%	1/16W
R260	1-216-817-11	METAL CHIP	470	5%	1/16W
R261	1-216-817-11	METAL CHIP	470	5%	1/16W
R262	1-216-815-11	METAL CHIP	330	5%	1/16W
R264	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R267	1-216-841-11	METAL CHIP	47K	5%	1/16W
R268	1-216-841-11	METAL CHIP	47K	5%	1/16W
R269	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R270	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R271	1-216-833-11	METAL CHIP	10K	5%	1/16W
R282	1-216-864-11	METAL CHIP	0		
R285	1-216-837-11	METAL CHIP	22K	5%	1/16W
R286	1-216-837-11	METAL CHIP	22K	5%	1/16W
R287	1-216-817-11	METAL CHIP	470	5%	1/16W
R288	1-216-817-11	METAL CHIP	470	5%	1/16W
R291	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R292	1-216-821-11	METAL CHIP	1K	5%	1/16W
R293	1-216-817-11	METAL CHIP	470	5%	1/16W
R294	1-216-817-11	METAL CHIP	470	5%	1/16W
R295	1-216-833-11	METAL CHIP	10K	5%	1/16W
R300	1-216-817-11	METAL CHIP	470	5%	1/16W
R301	1-216-817-11	METAL CHIP	470	5%	1/16W
R302	1-216-821-11	METAL CHIP	1K	5%	1/16W
R303	1-216-821-11	METAL CHIP	1K	5%	1/16W
R304	1-216-818-11	METAL CHIP	560	5%	1/16W
R305	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R306	1-216-817-11	METAL CHIP	470	5%	1/16W
R307	1-216-821-11	METAL CHIP	1K	5%	1/16W
R308	1-216-821-11	METAL CHIP	1K	5%	1/16W
R309	1-216-821-11	METAL CHIP	1K	5%	1/16W
R310	1-216-821-11	METAL CHIP	1K	5%	1/16W
R311	1-216-821-11	METAL CHIP	1K	5%	1/16W
R312	1-216-821-11	METAL CHIP	1K	5%	1/16W
R313	1-216-821-11	METAL CHIP	1K	5%	1/16W
R314	1-216-821-11	METAL CHIP	1K	5%	1/16W
R315	1-216-821-11	METAL CHIP	1K	5%	1/16W
R316	1-216-814-11	METAL CHIP	270	5%	1/16W
R317	1-216-814-11	METAL CHIP	270	5%	1/16W
R318	1-216-837-11	METAL CHIP	22K	5%	1/16W
R319	1-216-837-11	METAL CHIP	22K	5%	1/16W
R320	1-216-817-11	METAL CHIP	470	5%	1/16W
R321	1-216-817-11	METAL CHIP	470	5%	1/16W
R322	1-216-864-11	METAL CHIP	0		
R323	1-216-817-11	METAL CHIP	470	5%	1/16W
R324	1-216-809-11	METAL CHIP	100	5%	1/16W
R325	1-216-813-11	METAL CHIP	220	5%	1/16W
R326	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R327	1-216-837-11	METAL CHIP	22K	5%	1/16W
R328	1-216-838-11	METAL CHIP	27K	5%	1/16W
R329	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R330	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R331	1-216-817-11	METAL CHIP	470	5%	1/16W
R332	1-216-821-11	METAL CHIP	1K	5%	1/16W
R333	1-216-821-11	METAL CHIP	1K	5%	1/16W
R334	1-216-820-11	METAL CHIP	820	5%	1/16W
R335	1-216-817-11	METAL CHIP	470	5%	1/16W
R336	1-216-821-11	METAL CHIP	1K	5%	1/16W
R337	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R338	1-216-817-11	METAL CHIP	470	5%	1/16W
R339	1-216-836-11	METAL CHIP	18K	5%	1/16W
R340	1-216-833-11	METAL CHIP	10K	5%	1/16W
R344	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R346	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R347	1-216-846-11	METAL CHIP	120K	5%	1/16W
R348	1-216-845-11	METAL CHIP	100K	5%	1/16W
R349	1-216-833-11	METAL CHIP	10K	5%	1/16W
R351	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R352	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R353	1-216-817-11	METAL CHIP	470	5%	1/16W
R354	1-216-833-11	METAL CHIP	10K	5%	1/16W
R355	1-216-855-11	METAL CHIP	680K	5%	1/16W
R356	1-216-857-11	METAL CHIP	1M	5%	1/16W
R358	1-216-847-11	METAL CHIP	150K	5%	1/16W
R359	1-216-843-11	METAL CHIP	68K	5%	1/16W
R360	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R361	1-216-845-11	METAL CHIP	100K	5%	1/16W

Ref. No.		Part No.	Description			Remark
R362		1-216-845-11	METAL CHIP	100K	5%	1/16W
R363		1-216-845-11	METAL CHIP	100K	5%	1/16W
R364		1-216-833-11	METAL CHIP	10K	5%	1/16W
R365		1-216-841-11	METAL CHIP	47K	5%	1/16W
R366		1-216-833-11	METAL CHIP	10K	5%	1/16W
R367		1-216-836-11	METAL CHIP	18K	5%	1/16W
R368		1-216-837-11	METAL CHIP	22K	5%	1/16W
R369		1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R370		1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R371		1-216-817-11	METAL CHIP	470	5%	1/16W
R372		1-216-809-11	METAL CHIP	100	5%	1/16W
R373		1-216-838-11	METAL CHIP	27K	5%	1/16W
R374		1-216-845-11	METAL CHIP	100K	5%	1/16W
R375		1-216-839-11	METAL CHIP	33K	5%	1/16W
R376		1-216-833-11	METAL CHIP	10K	5%	1/16W
R377		1-216-821-11	METAL CHIP	1K	5%	1/16W
R378		1-216-817-11	METAL CHIP	470	5%	1/16W
R379		1-216-809-11	METAL CHIP	100	5%	1/16W
R380		1-216-849-11	METAL CHIP	220K	5%	1/16W
R381		1-216-837-11	METAL CHIP	22K	5%	1/16W
R382		1-216-837-11	METAL CHIP	22K	5%	1/16W
R383		1-216-838-11	METAL CHIP	27K	5%	1/16W
R384		1-216-850-11	METAL CHIP	270K	5%	1/16W
R385		1-216-838-11	METAL CHIP	27K	5%	1/16W
R386		1-216-833-11	METAL CHIP	10K	5%	1/16W
R390		1-216-821-11	METAL CHIP	1K	5%	1/16W
R391		1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R392		1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R393		1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R394		1-216-841-11	METAL CHIP	47K	5%	1/16W
R395		1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R396		1-216-809-11	METAL CHIP	100	5%	1/16W
R400		1-216-817-11	METAL CHIP	470	5%	1/16W
R401		1-216-819-11	METAL CHIP	680	5%	1/16W
R501		1-216-839-11	METAL CHIP	33K	5%	1/16W
R502		1-216-835-11	METAL CHIP	15K	5%	1/16W
R503		1-216-818-11	METAL CHIP	560	5%	1/16W
R504		1-216-816-11	METAL CHIP	390	5%	1/16W
R506		1-216-817-11	METAL CHIP	470	5%	1/16W
R515		1-216-821-11	METAL CHIP	1K	5%	1/16W
R517		1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R518		1-216-810-11	METAL CHIP	120	5%	1/16W
R521		1-216-835-11	METAL CHIP	15K	5%	1/16W
R522		1-216-818-11	METAL CHIP	560	5%	1/16W
R523		1-216-817-11	METAL CHIP	470	5%	1/16W
R524		1-216-817-11	METAL CHIP	470	5%	1/16W
R525		1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R526		1-216-839-11	METAL CHIP	33K	5%	1/16W
R527		1-216-837-11	METAL CHIP	22K	5%	1/16W
R528		1-216-821-11	METAL CHIP	1K	5%	1/16W
R529		1-216-839-11	METAL CHIP	33K	5%	1/16W
			< VARIABLE RESISTOR >			
RV201		1-230-870-11	RES, ADJ, METAL 10K			
RV202		1-230-869-11	RES, ADJ, METAL 4.7K			
RV203		1-230-869-11	RES, ADJ, METAL 4.7K			
RV205		1-238-089-11	RES, ADJ, CERMET 4.7K			
RV206		1-238-088-11	RES, ADJ, CERMET 2.2K			
RV207		1-238-087-11	RES, ADJ, CERMET 1K			
			< TERMINAL >			
TP001	*	1-535-622-11	PIN, TERMINAL			
			< FLEXIBLE BOARD >			
W001		1-634-428-11	FP-257 FLEXIBLE BOARD			
W002		1-634-426-11	FP-255 FLEXIBLE BOARD			
W201		1-634-427-11	FP-256 FLEXIBLE BOARD			
			< CRYSTAL >			
X001		1-577-467-21	VIBRATOR, CRYSTAL			
X150		1-567-699-21	VIBRATOR, CRYSTAL			

`************************************************************`

* A-7071-437-A SW-168 BOARD, COMPLETE

`**********************`

(Ref.No 6,000 Series)

Ref. No.		Part No.	Description	Remark
			< CONNECTOR >	
CN701	*	1-566-764-11	PIN, CONNECTOR (PC BOARD) 9P	
CN702	*	1-566-761-11	PIN, CONNECTOR (PC BOARD) 6P	
CN703		1-575-846-11	CONNECTOR, FPC (NON ZIF) 6P	
			< DIODE >	
D701		8-719-977-34	DIODE DTZ12	
D702		8-719-977-34	DIODE DTZ12	
D705		8-719-977-34	DIODE DTZ12	
			< JACK >	
J701		1-507-929-11	JACK (HEADPHONE)	
J702		1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
			< COIL >	
L701		1-410-369-11	INDUCTOR CHIP 1uH	
L702		1-410-369-11	INDUCTOR CHIP 1uH	
L703		1-410-369-11	INDUCTOR CHIP 1uH	
L704		1-410-369-11	INDUCTOR CHIP 1uH	
L705		1-410-369-11	INDUCTOR CHIP 1uH	

Ref. No.	Part No.	Description			Remark
L706	1-410-369-11	INDUCTOR CHIP 1uH			
		< SWITCH >			
S701	1-570-870-11	SWITCH, SLIDE (STANDBY)			
S702	1-571-838-11	SWITCH, TACTIL (REC START/STOP)			
**					
*	A-7062-795-A	VA-64 BOARD, COMPLETE			
		********************			
		(Ref. No 3,000 Series)			
*	1-535-622-11	PIN, TERMINAL			
	3-744-791-01	CASE, SHIELD, VA			
	7-627-553-48	PRECISION SCREW +P 2X4 TYPE 3			
		< CAPACITOR >			
C415	1-128-003-11	ELECT CHIP	22uF	20%	4V
C416	1-128-004-11	ELECT CHIP	10uF	20%	16V
C417	1-128-004-11	ELECT CHIP	10uF	20%	16V
C418	1-128-004-11	ELECT CHIP	10uF	20%	16V
C424	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C425	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C426	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C427	1-128-004-11	ELECT CHIP	10uF	20%	16V
C428	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C430	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C435	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C436	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C437	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C439	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C448	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C449	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C450	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C451	1-164-633-11	CERAMIC CHIP	0.1uF	10%	25V
C453	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C461	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C462	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C464	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C465	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C466	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C467	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C468	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C470	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C472	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C650	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C651	1-128-004-11	ELECT CHIP	10uF	20%	16V
C652	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C653	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C654	1-124-779-00	ELECT CHIP	10uF	20%	16V
C655	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C656	1-135-145-11	TANTALUM CHIP	0.47uF	10%	25V
C657	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C658	1-128-004-11	ELECT CHIP	10uF	20%	16V
C659	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C660	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C661	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C662	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C663	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C664	1-128-004-11	ELECT CHIP	10uF	20%	16V
C665	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C666	1-163-023-00	CERAMIC CHIP	0.015uF	5%	50V
C667	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C668	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C669	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C670	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C671	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C672	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C673	1-128-004-11	ELECT CHIP	10uF	20%	16V
C674	1-126-207-11	ELECT CHIP	33uF	20%	4V
C675	1-162-950-11	CERAMIC CHIP	180PF	5%	50V
C677	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C678	1-126-425-11	ELECT	10uF	20%	10V
C679	1-162-946-11	CERAMIC CHIP	27PF	5%	50V
C681	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C683	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C684	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C685	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C686	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C687	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C688	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C689	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C690	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C691	1-126-154-11	ELECT	47uF	20%	6.3V
C692	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C694	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C695	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C696	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C697	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C698	1-135-176-21	TANTALUM CHIP	0.68uF	10%	20V
C699	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C700	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C701	1-128-004-11	ELECT CHIP	10uF	20%	16V
C702	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C703	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C705	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C706	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref.No.	Part No.	Description			Remark
C707	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C708	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C709	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C710	1-162-951-11	CERAMIC CHIP	68PF	5%	50V
C712	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C713	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C714	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C715	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C716	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C717	1-162-952-11	CERAMIC CHIP	82PF	5%	50V
C718	1-136-015-00	CERAMIC CHIP	0.0033uF		50V
C719	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C720	1-126-199-11	ELECT CHIP	6.8uF	20%	35V
C721	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C722	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C723	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C724	1-126-601-11	ELECT	2.2uF	20%	50V
C725	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C726	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C727	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C728	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C729	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C730	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C731	1-128-013-11	ELECT CHIP	1uF	20%	50V
C733	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C734	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C735	1-162-936-11	CERAMIC CHIP	5PF	0.25PF	50V
C737	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C739	1-162-936-11	CERAMIC CHIP	5PF	0.25PF	50V
C741	1-162-938-11	CERAMIC CHIP	7PF	0.5PF	50V
C742	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C743	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C745	1-162-942-11	CERAMIC CHIP	12PF	5%	50V
C747	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C748	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C749	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C750	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C751	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C752	1-126-163-11	ELECT	4.7uF	20%	50V
C753	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C754	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V
C755	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C756	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C757	1-162-932-11	CERAMIC CHIP	2PF	0.25PF	50V
C758	1-162-939-11	CERAMIC CHIP	8PF	0.5PF	50V
C760	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C763	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C764	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C765	1-128-004-11	ELECT CHIP	10uF	20%	16V
C766	1-126-245-11	ELECT	330uF	20%	6.3V
C767	1-128-006-11	ELECT CHIP	4.7uF	20%	25V
C768	1-126-607-11	ELECT CHIP	47uF	20%	4V
C769	1-128-004-11	ELECT CHIP	10uF	20%	16V
C771	1-128-003-11	ELECT CHIP	22uF	20%	4V
C772	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C774	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C775	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C776	1-126-155-11	ELECT	100uF	20%	6.3V
C777	1-162-955-11	CERAMIC CHIP	150PF	5%	50V
C778	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C779	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C780	1-162-950-11	CERAMIC CHIP	56PF	5%	50V
C781	1-162-944-11	CERAMIC CHIP	18PF	5%	50V
C782	1-162-943-11	CERAMIC CHIP	15PF	5%	50V
C783	1-128-003-11	ELECT CHIP	22uF	20%	4V
C784	1-126-425-11	ELECT	10uF	20%	10V
C785	1-126-607-11	ELECT CHIP	47uF	20%	4V
C786	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C787	1-128-004-11	ELECT CHIP	10uF	20%	16V
C788	1-128-004-11	ELECT CHIP	10uF	20%	16V
C789	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C790	1-162-938-11	CERAMIC CHIP	7PF	0.5PF	50V
C794	1-164-634-11	CERAMIC CHIP	1uF		16V
C796	1-128-008-11	ELECT CHIP	3.3uF	20%	35V
C797	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C798	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C799	1-128-008-11	ELECT CHIP	3.3uF	20%	35V
C800	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C801	1-163-833-00	CERAMIC CHIP	0.068uF		25V
C802	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C803	1-128-008-11	ELECT CHIP	3.3uF	20%	35V
C804	1-128-004-11	ELECT CHIP	10uF	20%	16V
C805	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C806	1-162-949-11	CERAMIC CHIP	47PF	5%	50V
C808	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C809	1-164-634-11	CERAMIC CHIP	1uF		16V
C811	1-128-008-11	ELECT CHIP	3.3uF	20%	35V
C812	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C813	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C814	1-128-008-11	ELECT CHIP	3.3uF	20%	35V
C815	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C816	1-128-004-11	ELECT CHIP	10uF	20%	16V
C817	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C818	1-128-008-11	ELECT CHIP	3.3uF	20%	35V
C819	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C821	1-162-947-11	CERAMIC CHIP	33PF	5%	50V
C824	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C826	1-164-005-11	CERAMIC CHIP	0.47uF		25V

VA-64

Ref. No.	Part No.	Description	Remark
C827	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C828	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C829	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C831	1-126-425-11	ELECT 10uF 20% 10V	
C832	1-124-778-00	ELECT CHIP 22uF 20% 6.3V	
C833	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C836	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C837	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C838	1-126-245-11	ELECT 330uF 20% 6.3V	
C839	1-126-607-11	ELECT CHIP 47uF 20% 4V	
C840	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C841	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C842	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C843	1-126-607-11	ELECT CHIP 47uF 20% 4V	
C844	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C845	1-162-952-11	CERAMIC CHIP 82PF 5% 50V	
C848	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C851	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C856	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C857	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C858	1-126-245-11	ELECT 330uF 20% 6.3V	
C859	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C860	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C861	1-163-033-00	CERAMIC CHIP 0.022uF 50V	
C862	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C863	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C864	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C865	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C869	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C870	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C871	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C872	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C873	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C874	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C875	1-128-003-11	ELECT CHIP 22uF 20% 4V	
C876	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C878	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C880	1-128-003-11	ELECT CHIP 22uF 20% 4V	
C881	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C890	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	

< FILTER >

Ref. No.	Part No.	Description	Remark
CF650	1-577-162-11	FILTER, CERAMIC	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN551	1-568-801-11	CONNECTOR, FPC (ZIF) 24P	
CN650	1-580-057-11	PIN, CONNECTOR 4P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D415	8-719-421-30	DIODE MA141A	
D416	8-719-800-76	DIODE 1SS226	
D417	8-719-941-86	DIODE DAN202U	
D419	8-719-941-09	DIODE DAP202U	
D420	8-719-941-86	DIODE DAN202U	
D422	8-719-941-86	DIODE DAN202U	
D423	8-719-941-86	DIODE DAN202U	
D427	8-719-941-86	DIODE DAN202U	
D428	8-719-941-86	DIODE DAN202U	
D432	8-719-941-86	DIODE DAN202U	
D433	8-719-941-86	DIODE DAN202U	
D434	8-719-941-09	DIODE DAP202U	
D435	8-719-941-86	DIODE DAN202U	
D436	8-719-941-86	DIODE DAN202U	
D437	8-719-941-86	DIODE DAN202U	
D651	8-719-941-86	DIODE DAN202U	
D652	8-719-977-22	DIODE DTZ9.1	
D653	8-719-941-86	DIODE DAN202U	
D654	8-719-977-22	DIODE DTZ9.1	
D655	8-719-800-76	DIODE 1SS226	
D656	8-719-941-86	DIODE DAN202U	
D657	8-719-800-76	DIODE 1SS226	
D661	8-719-941-86	DIODE DAN202U	
D662	8-719-951-22	DIODE IMN10	
D663	8-719-941-86	DIODE DAN202U	
D667	8-719-941-89	DIODE DA106U	
D669	8-719-977-22	DIODE DTZ9.1	
D670	8-719-977-22	DIODE DTZ9.1	
D671	8-719-977-22	DIODE DTZ9.1	
D672	8-719-977-22	DIODE DTZ9.1	
D673	8-719-800-76	DIODE 1SS226	
D674	8-719-977-22	DIODE DTZ9.1	
D675	8-719-977-22	DIODE DTZ9.1	
D676	8-719-977-22	DIODE DTZ9.1	
D677	8-719-977-22	DIODE DTZ9.1	
D678	8-719-977-22	DIODE DTZ9.1	
D679	8-719-977-22	DIODE DTZ9.1	
D680	8-719-977-22	DIODE DTZ9.1	
D681	8-719-977-22	DIODE DTZ9.1	
D690	8-719-941-86	DIODE DAN202U	

< FILTER >

Ref. No.	Part No.	Description	Remark
FL650	1-236-186-11	FILTER, BAND PASS	
FL651	1-236-849-21	FILTER, BAND PASS	
FL652	1-236-850-21	FILTER, BAND PASS	
FL653	1-415-818-11	DELAY LINE, LC (Y)	
FL654	1-415-764-21	DELAY LINE, LC	

Ref. No.	Part No.	Description	Remark
FL655	1-236-848-21	FILTER, LOW PASS	
FL656	1-239-010-11	FILTER, LOW PASS (CCD.PAL.Y)	
FL657	1-236-775-11	FILTER, LOW PASS (DEM)	
FL658	1-236-774-11	FILTER, LOW PASS (Y)	
		< IC >	
IC416	8-759-710-09	IC NJM2233AM	
IC650	8-752-036-19	IC CXA1207AR	
IC651	8-752-036-20	IC CXA1208R	
IC652	8-759-605-61	IC CXA1203N	
IC653	8-759-925-60	IC BA401	
IC654	8-752-009-51	IC CX20095A	
IC656	8-759-320-76	IC HA118070FP	
IC657	8-752-333-24	IC CXL1506M	
IC658	8-752-333-24	IC CXL1506M	
IC659	8-759-710-29	IC NJM2235M	
IC660	8-759-710-07	IC NJM2234M	
IC661	8-759-710-07	IC NJM2234M	
IC662	8-759-009-22	IC MC14094BF	
IC663	8-759-710-29	IC NJM2235M	
		< JACK >	
J650	1-566-850-31	CONNECTOR, (S) TERMINAL 4P (S VIDEO)	
J651	1-569-556-11	JACK (VIDEO/AUDIO/RFU DC OUT)	
		< COIL >	
L443	1-412-058-11	INDUCTOR, CHIP 10uH	
L444	1-410-379-21	INDUCTOR, CHIP 6.8uH	
L445	1-410-385-11	INDUCTOR, CHIP 22uH	
L446	1-410-381-11	INDUCTOR, CHIP 10uH	
L447	1-410-379-21	INDUCTOR, CHIP 6.8uH	
L448	1-410-389-31	INDUCTOR, CHIP 47uH	
L650	1-410-380-31	INDUCTOR, CHIP 8.2uH	
L651	1-410-378-11	INDUCTOR, CHIP 5.6uH	
L652	1-410-385-11	INDUCTOR, CHIP 22uH	
L653	1-410-385-11	INDUCTOR, CHIP 22uH	
L657	1-410-386-11	INDUCTOR, CHIP 27uH	
L658	1-410-393-11	INDUCTOR, CHIP 100uH	
L659	1-410-655-31	INDUCTOR, CHIP 120uH	
L660	1-410-393-11	INDUCTOR, CHIP 100uH	
L661	1-410-656-11	INDUCTOR, CHIP 150uH	
L662	1-410-393-11	INDUCTOR, CHIP 100uH	
L663	1-410-381-11	INDUCTOR, CHIP 10uH	
L666	1-410-384-31	INDUCTOR, CHIP 18uH	
L667	1-408-797-11	INDUCTOR, CHIP 470uH	
L668	1-408-797-11	INDUCTOR, CHIP 470uH	
L669	1-410-384-31	INDUCTOR, CHIP 18uH	
L670	1-410-389-31	INDUCTOR, CHIP 47uH	
L671	1-410-389-31	INDUCTOR, CHIP 47uH	
L673	1-410-385-11	INDUCTOR, CHIP 22uH	
L674	1-410-382-31	INDUCTOR, CHIP 12uH	
L675	1-410-383-31	INDUCTOR, CHIP 15uH	
L676	1-410-380-31	INDUCTOR, CHIP 8.2uH	
L677	1-410-379-21	INDUCTOR, CHIP 6.8uH	
L678	1-410-388-21	INDUCTOR, CHIP 39uH	
L679	1-410-386-11	INDUCTOR, CHIP 27uH	
L681	1-412-058-11	INDUCTOR, CHIP 10uH	
L682	1-410-389-31	INDUCTOR, CHIP 47uH	
L683	1-412-058-11	INDUCTOR, CHIP 10uH	
L684	1-410-389-31	INDUCTOR, CHIP 47uH	
L685	1-410-389-31	INDUCTOR, CHIP 47uH	
L688	1-410-380-31	INDUCTOR, CHIP 8.2uH	
L689	1-410-389-31	INDUCTOR, CHIP 47uH	
L691	1-410-389-31	INDUCTOR, CHIP 47uH	
L692	1-410-655-31	INDUCTOR, CHIP 120uH	
L699	1-410-388-11	INDUCTOR, CHIP 39uH	
		< TRANSISTOR >	
Q411	8-729-905-23	TRANSISTOR 2SA1576-R	
Q412	8-729-905-18	TRANSISTOR DTC144EU	
Q415	8-729-905-23	TRANSISTOR 2SA1576-R	
Q416	8-729-905-35	TRANSISTOR 2SC4081-R	
Q417	8-729-905-12	TRANSISTOR DTA144EU	
Q418	8-729-905-35	TRANSISTOR 2SC4081-R	
Q421	8-729-905-23	TRANSISTOR 2SA1576-R	
Q422	8-729-905-18	TRANSISTOR DTC144EU	
Q423	8-729-905-35	TRANSISTOR 2SC4081-R	
Q426	8-729-905-35	TRANSISTOR 2SC4081-R	
Q427	8-729-905-35	TRANSISTOR 2SC4081-R	
Q428	8-729-905-XX	TRANSISTOR DTC114TU	
Q429	8-729-905-35	TRANSISTOR 2SC4081-R	
Q430	8-729-905-18	TRANSISTOR DTC144EU	
Q431	8-729-905-23	TRANSISTOR 2SA1576-R	
Q432	8-729-905-23	TRANSISTOR 2SA1576-R	
Q433	8-729-905-35	TRANSISTOR 2SC4081-R	
Q434	8-729-905-23	TRANSISTOR 2SA1576-R	
Q439	8-729-905-12	TRANSISTOR DTA144EU	
Q440	8-729-905-35	TRANSISTOR 2SC4081-R	
Q442	8-729-905-18	TRANSISTOR DTC144EU	
Q443	8-729-905-18	TRANSISTOR DTC144EU	
Q444	8-729-905-35	TRANSISTOR 2SC4081-R	
Q446	8-729-905-35	TRANSISTOR 2SC4081-R	
Q447	8-729-921-58	TRANSISTOR DTA144TU	
Q448	8-729-905-18	TRANSISTOR DTC144EU	
Q452	8-729-905-18	TRANSISTOR DTC144EU	
Q456	8-729-905-18	TRANSISTOR DTC144EU	
Q491	8-729-905-96	TRANSISTOR DTA114TU	
Q493	8-729-905-12	TRANSISTOR DTA144EU	

VA-64

Ref. No.	Part No.	Description	Remark
Q494	8-729-905-35	TRANSISTOR 2SC4081-R	
Q497	8-729-905-18	TRANSISTOR DTC144EU	
Q498	8-729-905-18	TRANSISTOR DTC144EU	
Q643	8-729-905-23	TRANSISTOR 2SA1576-R	
Q645	8-729-905-18	TRANSISTOR DTC144EU	
Q647	8-729-905-18	TRANSISTOR DTC144EU	
Q648	8-729-905-12	TRANSISTOR DTA144EU	
Q649	8-729-905-18	TRANSISTOR DTC144EU	
Q651	8-729-905-23	TRANSISTOR 2SA1576-R	
Q655	8-729-905-12	TRANSISTOR DTA144EU	
Q656	8-729-905-23	TRANSISTOR 2SA1576-R	
Q657	8-729-905-35	TRANSISTOR 2SC4081-R	
Q658	8-729-924-36	TRANSISTOR DTC143EU	
Q659	8-729-905-35	TRANSISTOR 2SC4081-R	
Q660	8-729-905-35	TRANSISTOR 2SC4081-R	
Q661	8-729-905-35	TRANSISTOR 2SC4081-R	
Q662	8-729-905-35	TRANSISTOR 2SC4081-R	
Q663	8-729-905-23	TRANSISTOR 2SA1576-R	
Q664	8-729-905-18	TRANSISTOR DTC144EU	
Q665	8-729-905-35	TRANSISTOR 2SC4081-R	
Q666	8-729-905-35	TRANSISTOR 2SC4081-R	
Q667	8-729-905-18	TRANSISTOR DTC144EU	
Q668	8-729-905-18	TRANSISTOR DTC144EU	
Q669	8-729-905-18	TRANSISTOR DTC144EU	
Q670	8-729-202-38	TRANSISTOR 2SC3326N	
Q671	8-729-905-18	TRANSISTOR DTC144EU	
Q672	8-729-905-18	TRANSISTOR DTC144EU	
Q673	8-729-905-12	TRANSISTOR DTA144EU	
Q674	8-729-141-48	TRANSISTOR 2SB624-BV345	
Q675	8-729-905-18	TRANSISTOR DTC144EU	
Q676	8-729-905-12	TRANSISTOR DTA144EU	
Q677	8-729-905-12	TRANSISTOR DTA144EU	
Q678	8-729-202-38	TRANSISTOR 2SC3326N	
Q679	8-729-202-38	TRANSISTOR 2SC3326N	
Q680	8-729-905-35	TRANSISTOR 2SC4081-R	
Q681	8-729-905-35	TRANSISTOR 2SC4081-R	
Q682	8-729-905-35	TRANSISTOR 2SC4081-R	
Q683	8-729-905-23	TRANSISTOR 2SA1576-R	
Q684	8-729-905-18	TRANSISTOR DTC144EU	
Q685	8-729-905-12	TRANSISTOR DTA144EU	
Q686	8-729-905-35	TRANSISTOR 2SC4081-R	
Q687	8-729-905-35	TRANSISTOR 2SC4081-R	
Q688	8-729-905-35	TRANSISTOR 2SC4081-R	
Q689	8-729-905-35	TRANSISTOR 2SC4081-R	
Q690	8-729-141-48	TRANSISTOR 2SB624-BV345	
Q691	8-729-905-18	TRANSISTOR DTC144EU	
Q692	8-729-905-18	TRANSISTOR DTC144EU	
Q693	8-729-202-38	TRANSISTOR 2SC3326N	
Q694	8-729-202-38	TRANSISTOR 2SC3326N	

Ref. No.	Part No.	Description	Remark
Q696	8-729-905-18	TRANSISTOR DTC144EU	
Q698	8-729-905-35	TRANSISTOR 2SC4081-R	
Q699	8-729-905-12	TRANSISTOR DTA144EU	
Q700	8-729-202-38	TRANSISTOR 2SC3326N	
Q701	8-729-905-35	TRANSISTOR 2SC4081-R	
Q702	8-729-905-35	TRANSISTOR 2SC4081-R	
Q703	8-729-905-23	TRANSISTOR 2SA1576-R	
Q705	8-729-905-12	TRANSISTOR DTA144EU	
Q707	8-729-904-20	TRANSISTOR FMA2	
Q708	8-729-904-07	TRANSISTOR FMG2	
Q711	8-729-905-12	TRANSISTOR DTA144EU	
Q712	8-729-905-12	TRANSISTOR DTA144EU	
Q717	8-729-905-23	TRANSISTOR 2SA1576-R	
Q719	8-729-905-18	TRANSISTOR DTC144EU	
Q721	8-729-202-38	TRANSISTOR 2SC3326N	
Q722	8-729-905-35	TRANSISTOR 2SC4081-R	
Q723	8-729-904-07	TRANSISTOR FMG2	
Q724	8-729-905-23	TRANSISTOR 2SA1576-R	
Q725	8-729-905-23	TRANSISTOR 2SA1576-R	
Q727	8-729-905-45	TRANSISTOR DTA143EU	
Q728	8-729-905-23	TRANSISTOR 2SA1576-R	
Q729	8-729-905-35	TRANSISTOR 2SC4081-R	
Q730	8-729-905-23	TRANSISTOR 2SA1576-R	
Q731	8-729-905-12	TRANSISTOR DTA144EU	
Q732	8-729-905-35	TRANSISTOR 2SC4081-R	
Q733	8-729-905-18	TRANSISTOR DTC144EU	
Q734	8-729-905-18	TRANSISTOR DTC144EU	
Q735	8-729-905-35	TRANSISTOR 2SC4081-R	
Q736	8-729-905-45	TRANSISTOR DTA143EU	
Q742	8-729-905-23	TRANSISTOR 2SA1576-R	
Q743	8-729-905-35	TRANSISTOR 2SC4081-R	
Q744	8-729-905-35	TRANSISTOR 2SC4081-R	
Q745	8-729-905-18	TRANSISTOR DTC144EU	
Q746	8-729-141-48	TRANSISTOR 2SB624-BV345	
Q747	8-729-905-23	TRANSISTOR 2SA1576-R	
Q748	8-729-905-35	TRANSISTOR 2SC4081-R	
Q751	8-729-905-35	TRANSISTOR 2SC4081-R	
Q752	8-729-905-23	TRANSISTOR 2SA1576-R	
Q753	8-729-904-20	TRANSISTOR FMA2	
Q756	8-729-905-23	TRANSISTOR 2SA1576-R	
Q757	8-729-905-35	TRANSISTOR 2SC4081-R	
Q758	8-729-905-35	TRANSISTOR 2SC4081-R	
Q760	8-729-905-12	TRANSISTOR DTA144EU	
Q761	8-729-905-18	TRANSISTOR DTC144EU	
Q762	8-729-905-18	TRANSISTOR DTC144EU	
Q763	8-729-905-18	TRANSISTOR DTC144EU	
Q764	8-729-905-35	TRANSISTOR 2SC4081-R	
Q765	8-729-905-35	TRANSISTOR 2SC4081-R	

Ref. No.	Part No.	Description				Remark
Q766	8-729-905-23	TRANSISTOR	2SA1576-R			
Q770	8-729-101-07	TRANSISTOR	2SB798-DL			
Q772	8-729-905-12	TRANSISTOR	DTA144EU			
Q773	8-729-905-12	TRANSISTOR	DTA144EU			
Q774	8-729-905-35	TRANSISTOR	2SC4081-R			
Q775	8-729-905-18	TRANSISTOR	DTC144EU			
Q776	8-729-921-58	TRANSISTOR	DTA144TU			
Q777	8-729-905-23	TRANSISTOR	2SA1576-R			
Q784	8-729-905-35	TRANSISTOR	2SC4081-R			
Q786	8-729-905-18	TRANSISTOR	DTC144EU			
Q990	8-729-905-18	TRANSISTOR	DTC144EU			
Q991	8-729-905-18	TRANSISTOR	DTC144EU			
		< RESISTOR >				
R411	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R412	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R413	1-216-812-11	METAL CHIP	180	5%	1/16W	
R414	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R415	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R416	1-216-813-11	METAL CHIP	220	5%	1/16W	
R417	1-216-816-11	METAL CHIP	390	5%	1/16W	
R418	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R420	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R421	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R422	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R423	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R424	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R425	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R426	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R427	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R428	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R429	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R430	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R431	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R432	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R439	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R440	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R445	1-216-864-11	METAL CHIP	0			
R446	1-216-864-11	METAL CHIP	0			
R448	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R449	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R451	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R452	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R453	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R454	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R456	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R457	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R458	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R459	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R460	1-216-864-11	METAL CHIP	0			
R462	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R463	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R464	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R465	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R466	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R467	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R468	1-216-813-11	METAL CHIP	220	5%	1/16W	
R469	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R471	1-216-864-11	METAL CHIP	0			
R472	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R473	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R474	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R475	1-216-864-11	METAL CHIP	0			
R476	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R484	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R486	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R488	1-216-850-11	METAL CHIP	270K	5%	1/16W	
R489	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R491	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R496	1-216-138-00	METAL CHIP	3.3	5%	1/8W	
R498	1-216-815-11	METAL CHIP	330	5%	1/16W	
R630	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R631	1-216-296-00	METAL CHIP	0	5%	1/8W	
R632	1-216-816-11	METAL CHIP	390	5%	1/16W	
R634	1-216-864-11	METAL CHIP	0			
R636	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R638	1-216-801-11	METAL CHIP	22	5%	1/16W	
R642	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R643	1-216-812-11	METAL CHIP	180	5%	1/16W	
R644	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R645	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R646	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R647	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R648	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R649	1-216-818-11	METAL CHIP	560	5%	1/16W	
R650	1-216-838-11	METAL CHIP	27K	5%	1/16W	
R651	1-216-814-11	METAL CHIP	270	5%	1/16W	
R652	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R654	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R655	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R657	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R658	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R659	1-216-864-11	METAL CHIP	0			
R660	1-216-812-11	METAL CHIP	180	5%	1/16W	
R661	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R662	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R664	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R665	1-216-853-11	METAL CHIP	470K	5%	1/16W	

VA-64

Ref. No.	Part No.	Description			Remark
R667	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R669	1-216-833-11	METAL CHIP	10K	5%	1/16W
R670	1-216-821-11	METAL CHIP	1K	5%	1/16W
R671	1-216-821-11	METAL CHIP	1K	5%	1/16W
R672	1-216-833-11	METAL CHIP	10K	5%	1/16W
R673	1-216-833-11	METAL CHIP	10K	5%	1/16W
R674	1-216-833-11	METAL CHIP	10K	5%	1/16W
R675	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R676	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R677	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R678	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R680	1-216-833-11	METAL CHIP	10K	5%	1/16W
R681	1-216-815-11	METAL CHIP	330	5%	1/16W
R682	1-216-815-11	METAL CHIP	330	5%	1/16W
R683	1-216-815-11	METAL CHIP	330	5%	1/16W
R684	1-216-821-11	METAL CHIP	1K	5%	1/16W
R685	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R686	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R688	1-216-819-11	METAL CHIP	680	5%	1/16W
R690	1-216-819-11	METAL CHIP	680	5%	1/16W
R691	1-216-864-11	METAL CHIP	0		
R692	1-216-833-11	METAL CHIP	10K	5%	1/16W
R693	1-216-813-11	METAL CHIP	220	5%	1/16W
R694	1-216-821-11	METAL CHIP	1K	5%	1/16W
R696	1-216-810-11	METAL CHIP	120	5%	1/16W
R697	1-216-812-11	METAL CHIP	180	5%	1/16W
R698	1-216-813-11	METAL CHIP	220	5%	1/16W
R701	1-216-833-11	METAL CHIP	10K	5%	1/16W
R704	1-216-833-11	METAL CHIP	10K	5%	1/16W
R706	1-216-864-11	METAL CHIP	0		
R707	1-216-833-11	METAL CHIP	10K	5%	1/16W
R709	1-216-841-11	METAL CHIP	47K	5%	1/16W
R710	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R711	1-216-836-11	METAL CHIP	18K	5%	1/16W
R712	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R713	1-216-800-11	METAL GLAZE	18	5%	1/16W
R714	1-216-841-11	METAL CHIP	47K	5%	1/16W
R715	1-216-841-11	METAL CHIP	47K	5%	1/16W
R716	1-216-039-00	METAL CHIP	390	5%	1/10W
R717	1-216-833-11	METAL CHIP	10K	5%	1/16W
R718	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R719	1-216-841-11	METAL CHIP	47K	5%	1/16W
R720	1-216-841-11	METAL CHIP	47K	5%	1/16W
R721	1-216-041-00	METAL CHIP	470	5%	1/10W
R723	1-216-699-11	METAL CHIP	100K	0.5%	1/10W
R724	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R725	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R726	1-216-817-11	METAL CHIP	470	5%	1/16W
R727	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R728	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R729	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R730	1-216-821-11	METAL CHIP	1K	5%	1/16W
R731	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R735	1-216-837-11	METAL CHIP	22K	5%	1/16W
R737	1-216-864-11	METAL CHIP	0		
R738	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R739	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R740	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R741	1-216-833-11	METAL CHIP	10K	5%	1/16W
R742	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R743	1-216-821-11	METAL CHIP	1K	5%	1/16W
R744	1-216-821-11	METAL CHIP	1K	5%	1/16W
R746	1-216-833-11	METAL CHIP	10K	5%	1/16W
R747	1-216-834-11	METAL CHIP	12K	5%	1/16W
R748	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R749	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R750	1-216-818-11	METAL CHIP	560	5%	1/16W
R751	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R752	1-216-833-11	METAL CHIP	10K	5%	1/16W
R753	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R754	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R755	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R756	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R757	1-216-699-11	METAL CHIP	100K	0.5%	1/10W
R758	1-216-845-11	METAL CHIP	100K	5%	1/16W
R759	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R760	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R762	1-216-845-11	METAL CHIP	100K	5%	1/16W
R763	1-216-845-11	METAL CHIP	100K	5%	1/16W
R764	1-216-845-11	METAL CHIP	100K	5%	1/16W
R766	1-216-821-11	METAL CHIP	1K	5%	1/16W
R767	1-216-821-11	METAL CHIP	1K	5%	1/16W
R768	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R769	1-216-816-11	METAL CHIP	390	5%	1/16W
R770	1-216-839-11	METAL CHIP	33K	5%	1/16W
R771	1-216-833-11	METAL CHIP	10K	5%	1/16W
R772	1-216-821-11	METAL CHIP	1K	5%	1/16W
R773	1-216-821-11	METAL CHIP	1K	5%	1/16W
R774	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R775	1-216-841-11	METAL CHIP	47K	5%	1/16W
R776	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R777	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R778	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R779	1-216-839-11	METAL CHIP	33K	5%	1/16W
R780	1-216-833-11	METAL CHIP	10K	5%	1/16W
R781	1-216-814-11	METAL CHIP	270	5%	1/16W
R782	1-216-831-11	METAL CHIP	6.8K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R783	1-216-838-11	METAL CHIP	27K	5%	1/16W
R787	1-216-841-11	METAL CHIP	47K	5%	1/16W
R788	1-216-837-11	METAL CHIP	22K	5%	1/16W
R789	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R790	1-216-821-11	METAL CHIP	1K	5%	1/16W
R791	1-216-833-11	METAL CHIP	10K	5%	1/16W
R792	1-216-833-11	METAL CHIP	10K	5%	1/16W
R793	1-216-815-11	METAL CHIP	330	5%	1/16W
R794	1-216-817-11	METAL CHIP	470	5%	1/16W
R795	1-216-811-11	METAL CHIP	150	5%	1/16W
R797	1-216-819-11	METAL CHIP	680	5%	1/16W
R799	1-216-835-11	METAL CHIP	15K	5%	1/16W
R801	1-216-817-11	METAL CHIP	470	5%	1/16W
R802	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R803	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R804	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R805	1-216-833-11	METAL CHIP	10K	5%	1/16W
R806	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R807	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R808	1-216-818-11	METAL CHIP	560	5%	1/16W
R809	1-216-814-11	METAL CHIP	270	5%	1/16W
R810	1-216-820-11	METAL CHIP	820	5%	1/16W
R812	1-216-833-11	METAL CHIP	10K	5%	1/16W
R814	1-216-864-11	METAL CHIP	0		
R817	1-216-833-11	METAL CHIP	10K	5%	1/16W
R818	1-216-833-11	METAL CHIP	10K	5%	1/16W
R819	1-216-837-11	METAL CHIP	22K	5%	1/16W
R820	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R822	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R823	1-216-821-11	METAL CHIP	1K	5%	1/16W
R824	1-216-821-11	METAL CHIP	1K	5%	1/16W
R825	1-216-817-11	METAL CHIP	470	5%	1/16W
R826	1-216-809-11	METAL CHIP	100	5%	1/16W
R828	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R831	1-216-864-11	METAL CHIP	0		
R832	1-216-833-11	METAL CHIP	10K	5%	1/16W
R834	1-216-814-11	METAL CHIP	270	5%	1/16W
R835	1-216-814-11	METAL CHIP	270	5%	1/16W
R836	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R837	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R838	1-216-817-11	METAL CHIP	470	5%	1/16W
R839	1-216-817-11	METAL CHIP	470	5%	1/16W
R840	1-216-821-11	METAL CHIP	1K	5%	1/16W
R841	1-216-817-11	METAL CHIP	470	5%	1/16W
R844	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R845	1-216-841-11	METAL CHIP	47K	5%	1/16W
R846	1-216-833-11	METAL CHIP	10K	5%	1/16W
R847	1-216-837-11	METAL CHIP	22K	5%	1/16W
R848	1-216-821-11	METAL CHIP	1K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R849	1-216-809-11	METAL CHIP	100	5%	1/16W
R850	1-216-810-11	METAL CHIP	120	5%	1/16W
R851	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R852	1-216-821-11	METAL CHIP	1K	5%	1/16W
R854	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R856	1-216-833-11	METAL CHIP	10K	5%	1/16W
R857	1-216-833-11	METAL CHIP	10K	5%	1/16W
R858	1-216-864-11	METAL CHIP	0		
R859	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R860	1-216-864-11	METAL CHIP	0		
R861	1-216-814-11	METAL CHIP	270	5%	1/16W
R862	1-216-834-11	METAL CHIP	12K	5%	1/16W
R863	1-216-834-11	METAL CHIP	12K	5%	1/16W
R865	1-216-816-11	METAL CHIP	390	5%	1/16W
R866	1-216-817-11	METAL CHIP	470	5%	1/16W
R867	1-216-814-11	METAL CHIP	270	5%	1/16W
R869	1-216-857-11	METAL CHIP	1M	5%	1/16W
R870	1-216-810-11	METAL CHIP	120	5%	1/16W
R871	1-216-842-11	METAL CHIP	56K	5%	1/16W
R872	1-216-844-11	METAL CHIP	82K	5%	1/16W
R873	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R874	1-216-834-11	METAL CHIP	12K	5%	1/16W
R875	1-216-839-11	METAL CHIP	33K	5%	1/16W
R876	1-216-842-11	METAL CHIP	56K	5%	1/16W
R877	1-216-817-11	METAL CHIP	470	5%	1/16W
R878	1-216-821-11	METAL CHIP	1K	5%	1/16W
R879	1-216-821-11	METAL CHIP	1K	5%	1/16W
R880	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R881	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R882	1-216-821-11	METAL CHIP	1K	5%	1/16W
R883	1-216-821-11	METAL CHIP	1K	5%	1/16W
R884	1-216-841-11	METAL CHIP	47K	5%	1/16W
R885	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R886	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R887	1-216-857-11	METAL CHIP	1M	5%	1/16W
R888	1-216-810-11	METAL CHIP	120	5%	1/16W
R889	1-216-844-11	METAL CHIP	82K	5%	1/16W
R890	1-216-819-11	METAL CHIP	680	5%	1/16W
R891	1-216-818-11	METAL CHIP	560	5%	1/16W
R892	1-216-839-11	METAL CHIP	33K	5%	1/16W
R893	1-216-842-11	METAL CHIP	56K	5%	1/16W
R894	1-216-817-11	METAL CHIP	470	5%	1/16W
R895	1-216-821-11	METAL CHIP	1K	5%	1/16W
R896	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R897	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R898	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R899	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R900	1-216-833-11	METAL CHIP	10K	5%	1/16W
R901	1-216-804-11	METAL CHIP	39	5%	1/16W

Ref. No.	Part No.	Description			Remark
R902	1-216-804-11	METAL CHIP	39	5%	1/16W
R903	1-216-821-11	METAL CHIP	1K	5%	1/16W
R908	1-216-804-11	METAL CHIP	39	5%	1/16W
R909	1-216-804-11	METAL CHIP	39	5%	1/16W
R910	1-216-864-11	METAL CHIP	0		
R911	1-216-864-11	METAL CHIP	0		
R912	1-216-864-11	METAL CHIP	0		
R913	1-216-833-11	METAL CHIP	10K	5%	1/16W
R917	1-216-833-11	METAL CHIP	10K	5%	1/16W
R919	1-216-821-11	METAL CHIP	1K	5%	1/16W
R920	1-216-821-11	METAL CHIP	1K	5%	1/16W
R923	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R924	1-216-821-11	METAL CHIP	1K	5%	1/16W
R925	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R926	1-216-821-11	METAL CHIP	1K	5%	1/16W
R932	1-216-864-11	METAL CHIP	0		
R934	1-216-864-11	METAL CHIP	0		
R936	1-216-864-11	METAL CHIP	0		
R939	1-216-864-11	METAL CHIP	0		
R941	1-216-864-11	METAL CHIP	0		
R943	1-216-821-11	METAL CHIP	1K	5%	1/16W
R945	1-216-848-11	METAL CHIP	180K	5%	1/16W
R946	1-218-863-11	METAL CHIP	4.7K	0.50%	1/16W
R947	1-218-861-11	METAL CHIP	3.9K	0.50%	1/16W
R948	1-218-845-11	METAL CHIP	820	0.50%	1/16W
R949	1-216-847-11	METAL CHIP	150K	5%	1/16W
R950	1-216-846-11	METAL CHIP	120K	5%	1/16W
R951	1-218-859-11	METAL CHIP	3.3K	0.50%	1/16W
R952	1-218-863-11	METAL CHIP	4.7K	0.50%	1/16W
R953	1-218-843-11	METAL CHIP	680	0.50%	1/16W
R954	1-216-841-11	METAL CHIP	47K	5%	1/16W
R955	1-216-837-11	METAL CHIP	22K	5%	1/16W
R956	1-216-835-11	METAL CHIP	15K	5%	1/16W
R957	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R958	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R959	1-216-817-11	METAL CHIP	470	5%	1/16W
R960	1-216-037-00	METAL CHIP	330	5%	1/10W
R961	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R962	1-216-804-11	METAL CHIP	39	5%	1/16W
R963	1-216-804-11	METAL CHIP	39	5%	1/16W
R969	1-216-296-00	METAL CHIP	0	5%	1/8W
R970	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R971	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R972	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R973	1-216-833-11	METAL CHIP	10K	5%	1/16W
R974	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R976	1-216-833-11	METAL CHIP	10K	5%	1/16W
R977	1-216-841-11	METAL CHIP	47K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R978	1-216-818-11	METAL CHIP	560	5%	1/16W
R981	1-216-837-11	METAL CHIP	22K	5%	1/16W
R983	1-216-837-11	METAL CHIP	22K	5%	1/16W
R984	1-216-833-11	METAL CHIP	10K	5%	1/16W
R985	1-216-837-11	METAL CHIP	22K	5%	1/16W
R986	1-216-847-11	METAL CHIP	150K	5%	1/16W
R987	1-216-847-11	METAL CHIP	150K	5%	1/16W
R989	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R994	1-216-821-11	METAL CHIP	1K	5%	1/16W
R995	1-216-820-11	METAL CHIP	820	5%	1/16W

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description
RV416	1-238-092-11	RES, ADJ, CERMET 47K
RV650	1-238-091-11	RES, ADJ, CERMET 22K
RV651	1-238-092-11	RES, ADJ, CERMET 47K
RV652	1-238-091-11	RES, ADJ, CERMET 22K
RV653	1-238-089-11	RES, ADJ, CERMET 4.7K
RV654	1-238-089-11	RES, ADJ, CERMET 4.7K
RV655	1-238-086-11	RES, ADJ, CERMET 470
RV656	1-238-091-11	RES, ADJ, CERMET 22K
RV657	1-238-089-11	RES, ADJ, CERMET 4.7K
RV658	1-238-090-11	RES, ADJ, CERMET 10K
RV661	1-238-089-11	RES, ADJ, CERMET 4.7K
RV662	1-238-087-11	RES, ADJ, CERMET 1K
RV663	1-238-087-11	RES, ADJ, CERMET 1K
RV664	1-238-087-11	RES, ADJ, CERMET 1K
RV666	1-238-087-11	RES, ADJ, CERMET 1K
RV686	1-238-087-11	RES, ADJ, CERMET 1K

< FLEXIBLE BOARD >

Ref. No.	Part No.	Description
W650	1-634-431-11	FP-260 FLEXIBLE BOARD

< CRYSTAL >

Ref. No.	Part No.	Description
X650	1-577-117-21	VIBRATOR, CRYSTAL

****

* A-7062-798-A VC-86 BOARD, COMPLETE

****

(Ref.No 1,000 Series)

* 3-744-763-01 CASE, SHIELD, VC

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C301	1-162-945-11	CERAMIC CHIP	22PF	5%	50V
C302	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C401	1-164-634-11	CERAMIC CHIP	1uF		16V
C402	1-164-634-11	CERAMIC CHIP	1uF		16V
C403	1-164-156-11	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remark
C404	1-164-634-11	CERAMIC CHIP	1uF		16V
C406	1-164-156-11	CERAMIC CHIP	0. 1uF		25V
C407	1-164-634-11	CERAMIC CHIP	1uF		16V
C408	1-162-964-11	CERAMIC CHIP	0. 001uF	10%	50V
C409	1-164-156-11	CERAMIC CHIP	0. 1uF		25V
C410	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C411	1-124-566-11	ELECT	120uF	20%	6. 3V
C412	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C413	1-164-634-11	CERAMIC CHIP	1uF		16V
C414	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C415	1-163-038-00	CERAMIC CHIP	0. 1uF		25V
C416	1-163-038-00	CERAMIC CHIP	0. 1uF		25V
C417	1-163-038-00	CERAMIC CHIP	0. 1uF		25V
C419	1-162-964-11	CERAMIC CHIP	0. 001uF	10%	50V
C420	1-162-941-11	CERAMIC CHIP	10PF	0. 5PF	50V
C501	1-126-205-11	ELECT CHIP	47uF	20%	6. 3V
C502	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C503	1-164-634-11	CERAMIC CHIP	1uF		16V
C506	1-164-156-11	CERAMIC CHIP	0. 1uF		25V
C507	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C508	1-135-072-21	TANTALUM CHIP	0. 22uF	10%	35V
C509	1-162-970-11	CERAMIC CHIP	0. 01uF	10%	25V
C510	1-128-004-11	ELECT CHIP	10uF	20%	16V
C511	1-135-180-21	TANTALUM CHIP	3. 3uF	20%	6. 3V
C512	1-135-180-21	TANTALUM CHIP	3. 3uF	20%	6. 3V
C513	1-135-180-21	TANTALUM CHIP	3. 3uF	20%	6. 3V
C514	1-164-156-11	CERAMIC CHIP	0. 1uF		25V
C521	1-162-638-11	CERAMIC CHIP	1uF		16V
C651	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C653	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C654	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C656	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C657	1-135-091-00	TANTALUM CHIP	1uF	20%	16V
C659	1-135-180-21	TANTALUM CHIP	3. 3uF	20%	6. 3V
C660	1-164-156-11	CERAMIC CHIP	0. 1uF		25V
C661	1-164-005-11	CERAMIC CHIP	0. 47uF		25V
C662	1-162-964-11	CERAMIC CHIP	0. 001uF	10%	50V
C663	1-164-156-11	CERAMIC CHIP	0. 1uF		25V
C664	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C665	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C666	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C667	1-164-156-11	CERAMIC CHIP	0. 1uF		25V
C668	1-164-156-11	CERAMIC CHIP	0. 1uF		25V
C669	1-164-156-11	CERAMIC CHIP	0. 1uF		25V
C750	1-162-974-11	CERAMIC CHIP	0. 01uF		50V
C751	1-135-151-21	TANTALUM CHIP	4. 7uF	20%	4V

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
CN301	1-568-338-11	CONNECTOR, BOARD TO BOARD 24P	
CN302	1-568-331-11	CONNECTOR, BOARD TO BOARD 10P	
CN304	1-565-877-11	PIN, CONNECTOR (PC BOARD) 5P	
CN305	1-566-528-21	CONNECTOR, FPC (ZIF) 12P	
CN306	* 1-565-875-11	PIN, CONNECTOR (PC BOARD) 3P	
CN307	* 1-565-876-11	PIN, CONNECTOR (PC BOARD) 4P	
CN308	* 1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P	
CN651	* 1-566-187-11	PIN, CONNECTOR (PC BOARD) 8P	
CN652	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P	
CN653	1-565-877-11	PIN, CONNECTOR (PC BOARD) 5P	
CN654	1-565-874-11	PIN, CONNECTOR (PC BOARD) 2P	
CN655	* 1-565-529-21	PIN, CONNECTOR (PC BOARD) 4P	
		< DIODE >	
D501	8-719-404-46	DIODE MA110	
D502	8-719-404-46	DIODE MA110	
D503	8-719-404-46	DIODE MA110	
D504	8-719-404-46	DIODE MA110	
D651	8-719-976-90	DIODE DTZ4. 3A	
D651	8-719-976-91	DIODE DTZ4. 3B	
D652	8-719-977-34	DIODE DTZ12	
		< FILTER >	
FL301	1-236-759-21	FILTER, LOW PASS (TRAP)	
FL302	1-415-731-21	DELAY LINE, LC (YH)	
FL303	1-415-819-11	DELAY LINE, LC	
FL401	1-415-763-21	DELAY LINE, LC	
FL402	1-415-730-21	DELAY LINE, LC (100NS)	
		< HIC >	
HIC301	A-7068-186-A	MX-10 BOARD, COMPLETE (HIC)	
		< IC >	
IC301	8-759-635-27	IC M62352GP	
IC401	8-752-038-XX	IC CXA1392R	
IC501	8-759-038-85	IC MC68HC11E9FU-SC400226	
IC504	8-759-635-27	IC M62352GP	
IC508	8-759-937-56	IC S-8054ALB-LM-S	
IC509	8-759-509-05	IC XRU4066BF	
IC510	8-759-998-96	IC LM324D	
IC651	8-759-981-82	IC RC3414M	
IC652	8-759-998-96	IC LM324D	
IC653	8-759-500-11	IC MM1036XFF	
IC655	8-759-208-11	IC TC4053BFHB	
IC656	8-759-998-96	IC LM324D	

Ref. No.	Part No.	Description	Remark
		< COIL >	
L401	1-410-391-11	INDUCTOR, CHIP 68uH	
L502	1-412-058-11	INDUCTOR, CHIP 10uH	
L503	1-412-062-11	INDUCTOR, CHIP 47uH	
		< TRANSISTOR >	
Q301	8-729-905-23	TRANSISTOR 2SA1576-R	
Q302	8-729-905-23	TRANSISTOR 2SA1576-R	
Q303	8-729-402-84	TRANSISTOR XN4601	
Q401	8-729-402-84	TRANSISTOR XN4601	
Q402	8-729-402-84	TRANSISTOR XN4601	
Q403	8-729-905-23	TRANSISTOR 2SA1576-R	
Q404	8-729-905-35	TRANSISTOR 2SC4081-R	
Q504	8-729-403-10	TRANSISTOR XN6215	
Q505	8-729-403-10	TRANSISTOR XN6215	
Q506	8-729-925-77	TRANSISTOR IMH6	
Q507	8-729-420-50	TRANSISTOR UN5215	
Q508	8-729-402-78	TRANSISTOR XN6401	
Q509	8-729-403-10	TRANSISTOR XN6215	
Q510	8-729-905-35	TRANSISTOR 2SC4081-R	
Q513	8-729-402-84	TRANSISTOR XN4601	
Q516	8-729-905-35	TRANSISTOR 2SC4081-R	
Q517	8-729-905-23	TRANSISTOR 2SA1576-R	
Q652	8-729-402-42	TRANSISTOR UN5213	
Q653	8-729-905-23	TRANSISTOR 2SA1576-R	
Q654	8-729-106-60	TRANSISTOR 2SB1115A	
Q655	8-729-905-35	TRANSISTOR 2SC4081-R	
Q656	8-729-821-88	TRANSISTOR 2SK1332-3	
		< RESISTOR >	
R301	1-216-864-11	METAL CHIP 0	
R302	1-216-820-11	METAL CHIP 820 5%	1/16W
R304	1-216-821-11	METAL CHIP 1K 5%	1/16W
R307	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R310	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R311	1-216-821-11	METAL CHIP 1K 5%	1/16W
R312	1-216-836-11	METAL CHIP 18K 5%	1/16W
R313	1-216-837-11	METAL CHIP 22K 5%	1/16W
R314	1-216-864-11	METAL CHIP 0	
R316	1-216-839-11	METAL CHIP 33K 5%	1/16W
R317	1-216-836-11	METAL CHIP 18K 5%	1/16W
R318	1-216-833-11	METAL CHIP 10K 5%	1/16W
R321	1-216-833-11	METAL CHIP 10K 5%	1/16W
R322	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R325	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R327	1-216-864-11	METAL CHIP 0	
R350	1-216-841-11	METAL CHIP 47K 5%	1/16W
R351	1-216-841-11	METAL CHIP 47K 5%	1/16W

Ref. No.	Part No.	Description	Remark
R401	1-216-821-11	METAL CHIP 1K 5%	1/16W
R403	1-216-821-11	METAL CHIP 1K 5%	1/16W
R404	1-216-830-11	METAL CHIP 5.6K 5%	1/16W
R405	1-216-828-11	METAL CHIP 3.9K 5%	1/16W
R406	1-216-864-11	METAL CHIP 0	
R407	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
R410	1-216-864-11	METAL CHIP 0	
R414	1-216-864-11	METAL CHIP 0	
R415	1-216-820-11	METAL CHIP 820 5%	1/16W
R416	1-216-817-11	METAL CHIP 470 5%	1/16W
R417	1-216-833-11	METAL CHIP 10K 5%	1/16W
R418	1-216-833-11	METAL CHIP 10K 5%	1/16W
R419	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R420	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R421	1-216-821-11	METAL CHIP 1K 5%	1/16W
R422	1-216-837-11	METAL CHIP 22K 5%	1/16W
R427	1-216-841-11	METAL CHIP 47K 5%	1/16W
R428	1-216-835-11	METAL CHIP 15K 5%	1/16W
R429	1-216-839-11	METAL CHIP 33K 5%	1/16W
R432	1-216-839-11	METAL CHIP 33K 5%	1/16W
R435	1-216-833-11	METAL CHIP 10K 5%	1/16W
R437	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R440	1-216-864-11	METAL CHIP 0	
R501	1-216-837-11	METAL CHIP 22K 5%	1/16W
R502	1-216-837-11	METAL CHIP 22K 5%	1/16W
R503	1-216-833-11	METAL CHIP 10K 5%	1/16W
R504	1-216-833-11	METAL CHIP 10K 5%	1/16W
R505	1-216-841-11	METAL CHIP 47K 5%	1/16W
R506	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R508	1-216-833-11	METAL CHIP 10K 5%	1/16W
R509	1-216-833-11	METAL CHIP 10K 5%	1/16W
R510	1-216-833-11	METAL CHIP 10K 5%	1/16W
R513	1-216-845-11	METAL CHIP 100K 5%	1/16W
R514	1-216-833-11	METAL CHIP 10K 5%	1/16W
R515	1-216-857-11	METAL CHIP 1M 5%	1/16W
R517	1-216-833-11	METAL CHIP 10K 5%	1/16W
R518	1-216-833-11	METAL CHIP 10K 5%	1/16W
R521	1-216-833-11	METAL CHIP 10K 5%	1/16W
R522	1-216-833-11	METAL CHIP 10K 5%	1/16W
R523	1-216-840-11	METAL CHIP 39K 5%	1/16W
R524	1-216-833-11	METAL CHIP 10K 5%	1/16W
R525	1-216-833-11	METAL CHIP 10K 5%	1/16W
R526	1-216-847-11	METAL CHIP 150K 5%	1/16W
R527	1-216-845-11	METAL CHIP 100K 5%	1/16W
R528	1-216-833-11	METAL CHIP 10K 5%	1/16W
R529	1-216-845-11	METAL CHIP 100K 5%	1/16W
R530	1-216-845-11	METAL CHIP 100K 5%	1/16W
R531	1-216-833-11	METAL CHIP 10K 5%	1/16W

Ref. No.	Part No.	Description			Remark
R532	1-216-833-11	METAL CHIP	10K	5%	1/16W
R533	1-216-833-11	METAL CHIP	10K	5%	1/16W
R534	1-216-837-11	METAL CHIP	22K	5%	1/16W
R535	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R536	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R537	1-216-845-11	METAL CHIP	100K	5%	1/16W
R546	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R547	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R560	1-216-833-11	METAL CHIP	10K	5%	1/16W
R561	1-216-864-11	METAL CHIP	0		
R562	1-216-833-11	METAL CHIP	10K	5%	1/16W
R653	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R654	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R655	1-216-675-11	METAL CHIP	10K	0.5%	1/10W
R656	1-216-679-11	METAL CHIP	15K	0.5%	1/10W
R657	1-216-679-11	METAL CHIP	15K	0.5%	1/10W
R658	1-216-841-11	METAL CHIP	47K	5%	1/16W
R666	1-216-819-11	METAL CHIP	680	5%	1/16W
R667	1-216-821-11	METAL CHIP	1K	5%	1/16W
R672	1-216-821-11	METAL CHIP	1K	5%	1/16W
R678	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R680	1-216-819-11	METAL CHIP	680	5%	1/16W
R681	1-216-820-11	METAL CHIP	820	5%	1/16W
R682	1-216-833-11	METAL CHIP	10K	5%	1/16W
R683	1-216-857-11	METAL CHIP	1M	5%	1/16W
R684	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R685	1-216-848-11	METAL CHIP	180K	5%	1/16W
R686	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R687	1-216-833-11	METAL CHIP	10K	5%	1/16W
R688	1-216-841-11	METAL CHIP	47K	5%	1/16W
R689	1-216-843-11	METAL CHIP	68K	5%	1/16W
R690	1-216-839-11	METAL CHIP	33K	5%	1/16W
R691	1-216-849-11	METAL CHIP	220K	5%	1/16W
R692	1-216-833-11	METAL CHIP	10K	5%	1/16W
R693	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R694	1-216-848-11	METAL CHIP	180K	5%	1/16W
R695	1-216-844-11	METAL CHIP	82K	5%	1/16W
R698	1-216-837-11	METAL CHIP	22K	5%	1/16W
R699	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R700	1-216-855-11	METAL CHIP	680K	5%	1/16W
R701	1-216-837-11	METAL CHIP	22K	5%	1/16W
R750	1-216-695-11	METAL CHIP	68K	0.5%	1/10W
R751	1-216-833-11	METAL CHIP	10K	5%	1/16W
R752	1-216-105-00	METAL CHIP	220K	5%	1/10W
R753	1-216-687-11	METAL CHIP	33K	0.5%	1/10W
R754	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R755	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R800	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R801	1-216-825-11	METAL CHIP	2.2K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R802	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R803	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R804	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R805	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R806	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R807	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R808	1-216-847-11	METAL CHIP	150K	5%	1/16W
R809	1-216-821-11	METAL CHIP	1K	5%	1/16W

< CRYSTAL >

X501	1-578-689-21	VIBRATOR			

****

* A-7062-278-A VF-26 BOARD, COMPLETE
****
(Ref.No 8,000 Series)

< CAPACITOR >

C901	1-126-369-11	ELECT	220uF	20%	6.3V
C902	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C904	1-127-515-11	ELECT(SOLID)	47uF	20%	6.3V
C905	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C906	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C907 ⚠	1-162-625-11	CERAMIC CHIP	0.0047uF	5%	50V
C908 ⚠	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C909	1-126-193-11	ELECT	1uF	20%	50V
C911	1-131-388-00	TANTALUM	68uF	10%	6.3V
C912	1-102-038-00	CERAMIC	0.001uF		
C913	1-163-033-00	CERAMIC CHIP	0.022uF		50V
C915	1-126-193-11	ELECT	1uF	20%	50V
C916	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (TYPE 1)
C916	1-163-145-00	CERAMIC CHIP	0.0015uF	5%	50V (TYPE 2)
C917	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V (TYPE 2)
C917	1-135-166-21	TANTALUM CHIP	47uF	10%	10V (TYPE 1)
C918	1-162-638-11	CERAMIC CHIP	1uF		16V
C919	1-135-070-00	TANTALUM CHIP	0.1uF	10%	35V
C920	1-164-232-11	CERAMIC CHIP	0.01uF		50V

< CONNECTOR >

CN901	* 1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P			
CN902	* 1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P			
CN904	1-575-570-21	CONNECTOR, FPC/FFC 6P			

< CONPOSITION CIRCUIT BLOCK >

CP901	1-238-119-11	RES, ADJ			

< CONNECTOR >

CRT901	1-526-978-21	SOCKET ASSY, CRT			

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

VF-26 **VF-27**

Ref. No.		Part No.	Description	Remark
			< DIODE >	
D670		8-719-404-46	DIODE MA110	
D903		8-719-400-20	DIODE MA152WA	
D955		8-719-404-19	DIODE LN1251C	
			< IC >	
IC901		8-759-420-01	IC AN2512S (TYPE 1)	
IC901		8-759-511-01	IC BA7147F (TYPE 2)	
IC901		8-759-514-92	IC XRA7147F (TYPE 2)	
			< COIL >	
L901		1-410-645-31	INDUCTOR 100uH	
L902		1-410-385-11	INDUCTOR CHIP 22uH	
L903	⚠·	1-459-858-11	COIL, FERRITE (HLC)	
			< TRANSISTOR >	
Q903		8-729-106-68	TRANSISTOR 2SD1615-AGP	
Q904		8-729-216-31	TRANSISTOR 2SA1163G	
			< RESISTOR >	
R902		1-216-051-00	METAL CHIP 1.2K 5% 1/10W (TYPE 1)	
R903		1-216-041-00	METAL CHIP 470 5% 1/10W	
R907		1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R908		1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R909		1-216-061-00	METAL CHIP 3.3K 5% 1/10W	
R911		1-216-079-00	METAL CHIP 18K 5% 1/10W	
R914		1-216-133-00	METAL CHIP 3.3M 5% 1/10W	
R915		1-216-133-00	METAL CHIP 3.3M 5% 1/10W	
R916		1-216-125-00	METAL CHIP 1.5M 5% 1/10W	
R917		1-216-121-00	METAL CHIP 1M 5% 1/10W	
R919		1-216-097-00	METAL CHIP 100K 5% 1/10W	
R920		1-216-111-00	METAL CHIP 390K 5% 1/10W (TYPE 2)	
R920		1-216-113-00	METAL CHIP 470K 5% 1/10W (TYPE 1)	
R921		1-216-011-00	METAL CHIP 27 5% 1/10W (TYPE 2)	
R921		1-216-013-00	METAL CHIP 33 5% 1/10W (TYPE 1)	
R922		1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R923		1-216-025-00	METAL CHIP 100 5% 1/10W	
R924		1-216-306-11	METAL CHIP 3.9 5% 1/10W	
R925		1-216-334-11	METAL CHIP 22K 1% 1/10W (TYPE 2)	
R925		1-216-336-11	METAL CHIP 47K 1% 1/10W (TYPE 1)	
R926		1-216-107-00	METAL CHIP 270K 5% 1/10W (TYPE 1)	
R926		1-218-165-11	METAL CHIP 220K 1% 1/10W (TYPE 2)	
R928		1-216-870-11	METAL CHIP 180K 1% 1/10W	
R929		1-216-053-00	METAL CHIP 1.5K 5% 1/10W (TYPE 1)	
R929		1-216-073-00	METAL CHIP 10K 5% 1/10W (TYPE 2)	
R930		1-216-089-00	METAL CHIP 47K 5% 1/10W	
R931		1-216-121-00	METAL CHIP 1M 5% 1/10W (TYPE 1)	
R950		1-216-041-00	METAL CHIP 470 5% 1/10W	

Ref. No.		Part No.	Description	Remark
R951		1-216-295-00	METAL CHIP 0 5% 1/10W	
			< VARIABLE RESISTOR >	
RV901		1-238-647-11	RES, ADJ, METAL GLAZE 4.7M	
			< TRANSFORMER >	
T901	⚠·	1-439-428-11	TRANSFORMER ASSY, FLYBACK	
			< THERMISTOR >	
TH901		1-807-938-11	THERMISTOR	

`*******************************************************`

`* A-7062-279-A VF-27 BOARD, COMPLETE`

`*********************`

(Ref.No 9,000 Series)

Ref. No.		Part No.	Description	Remark
			< CAPACITOR >	
C901		1-124-442-00	ELECT 330uF 20% 6.3V	
C903		1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	
C904		1-126-160-11	ELECT 1uF 20% 50V	
C905		1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C906		1-131-381-00	TANTALUM 47uF 10% 10V	
C907		1-162-638-11	CERAMIC CHIP 1uF 16V	
C908		1-136-165-00	FILM 0.1uF 5% 50V	
C909		1-163-109-00	CERAMIC CHIP 47PF 5% 50V	
C910		1-124-587-11	ELECT 220uF 20% 6.3V	
C911		1-163-141-00	CERAMIC CHIP 0.001uF 5% 50V	
C912	⚠·	1-162-625-11	CERAMIC CHIP 0.0047uF 5% 50V	
C913	⚠·	1-162-625-11	CERAMIC CHIP 0.0047uF 5% 50V	
C914	⚠·	1-163-209-00	CERAMIC CHIP 0.0015uF 5% 50V	
C915		1-126-090-11	ELECT 82uF 20% 10V	
C916		1-126-163-11	ELECT 4.7uF 20% 50V	
C918		1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C919		1-102-038-00	CERAMIC 0.001uF	
			< CONNECTOR >	
CN902	*	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
CN903	*	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
CN904		1-575-570-21	CONNECTOR, FPC/FFC 6P	
			< DIODE >	
D903		8-719-400-20	DIODE MA152WA	
D955		8-719-404-19	DIODE LN1251C	
			< IC >	
IC901		8-759-420-01	IC AN2512S	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
		< COIL >	
L901	1-410-831-21	INDUCTOR 82uH	
L902	1-408-977-21	INDUCTOR 39uH	
L903 ⚠·	1-459-858-11	COIL, FERRITE (HLC)	
		< TRANSISTOR >	
Q903	8-729-216-31	TRANSISTOR 2SA1163G	
Q904	8-729-100-66	TRANSISTOR 2SC1623	
Q905	8-729-106-68	TRANSISTOR 2SD1615-AGP	
		< RESISTOR >	
R903	1-216-041-00	METAL CHIP 470 5% 1/10W	
R905	1-216-007-00	METAL CHIP 18 5% 1/10W	
R906	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R908	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R909	1-216-113-00	METAL CHIP 470K 5% 1/10W	
R910	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R911	1-216-013-00	METAL CHIP 33 5% 1/10W	
R912	1-216-691-11	METAL CHIP 47K 0.5% 1/10W	
R913	1-216-107-00	METAL CHIP 270K 5% 1/10W	
R914	1-216-025-00	METAL CHIP 100 5% 1/10W	
R915	1-216-306-11	METAL CHIP 3.9 5% 1/10W	
R917	1-216-045-00	METAL CHIP 680 5% 1/10W	
R918	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R919	1-216-748-11	METAL CHIP 39K 5% 1/10W	
R920	1-216-748-11	METAL CHIP 39K 5% 1/10W	
R921	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R922	1-216-101-00	METAL CHIP 150K 5% 1/10W	
R923	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R924	1-216-131-11	METAL CHIP 2.7M 5% 1/10W	
R925	1-216-131-11	METAL CHIP 2.7M 5% 1/10W	
R926	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R928	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R933	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R950	1-216-041-00	METAL CHIP 470 5% 1/10W	
		< VARIABLE RESISTOR >	
RV901	1-230-873-11	RES, ADJ, METAL 47K	
RV902	1-230-866-11	RES, ADJ, METAL 470	
RV903	1-230-869-11	RES, ADJ, METAL 4.7K	
RV904	1-228-762-00	RES, ADJ, METAL GLAZE 1M	
		< TRANSFORMER >	
T901 ⚠·	1-439-431-11	TRANSFORMER ASSY, FLYBACK	
		< THERMISTOR >	
TH901	1-807-938-11	THERMISTOR	

Ref. No.	Part No.	Description	Remark
		< CONNECTOR >	
W901	1-540-019-21	SOCKET ASSY, CRT	

****

MISCELLANEOUS
****

Ref. No.	Part No.	Description	Remark
121 *	8-814-268-00	MICROPHONE C-2033 SET	
214	1-569-347-11	CONNECTOR, FPC (TRANSLATION) 13P	
222	1-569-346-11	CONNECTOR, FPC (TRANSLATION) 10P	
263	1-808-505-12	SENSOR (DEW)	
404 ⚠·	1-466-230-21	CONVERTER UNIT, D/D	
406	1-547-482-11	LENS, ZOOM (VCL-8508XJ)	
410	1-547-381-12	FILTER BLOCK, OPTICAL	
413	8-752-604-72	IC ICX039AN-2	
451	1-547-482-11	LENS, ZOOM (VCL-8508XJ)	
455	3-708-237-01	MOTOR ASSY, AF	
465	3-708-240-01	MOTOR ASSY, PZ	
466	3-708-235-01	METER ASSY, IG	
J101	1-537-241-11	TERMINAL BOARD (BATTERY)	
L901-1⚠·	1-451-310-21	DEFLECTION YOKE (B/W)	
M902	8-835-331-01	MOTOR, DC U-22A	
M903	A-7040-208-A	MOTOR ASSY, THREADING	
S903	1-572-320-11	SWITCH, PUSH (ZOOM)	
V901-1⚠·	1-546-085-11	CATHODE-RAY TUBE, B/W	
V901-2⚠·	1-452-482-11	CRT ASSY (M91JYZ60WB)	

****

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
		ACCESSORY & PACKING MATERIAL	
		****************************	
	1-465-395-81	COMMANDER, REMOTE (RMT-502)	
	1-571-164-11	SWITCH, ANTENNA CHANGE (CABLE)	(UK)
	1-575-334-11	CORD, CONNECTION (AV 3P-3P)	
*	1-575-335-21	CORD, CONNECTION	
	3-340-514-01	BAG, PROTECTION	
	3-712-673-01	SCREWDRIVER (UK)	
	3-738-517-01	BELT, SHOULDER	
	3-753-112-11	MANUAL, INSTRUCTION (ENGLISH)	
	3-753-112-41	MANUAL, INSTRUCTION (FRENCH/GERMAN/SPANISH)	(AEP)
	3-753-112-51	MANUAL, INSTRUCTION (DUTCH/SWEDISH/ITALIAN)	(AEP)
*	3-940-119-51	INDIVIDUAL CARTON	
*	3-940-910-01	CUSHION, ACC	
*	3-942-402-01	CUSHION (UPPER)	
*	3-942-403-01	CUSHION (LOWER)	
**	AC-V35	AC POWER ADAPTOR	
***	NP-66H	BATTERY PACK	
***	RFU-89EA	RFU ADAPTOR (UK)	
***	RFU-90EA	RFU ADAPTOR (AEP)	

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORIES.

****

HARDWARE LIST

****

# 1	7-685-103-19	+ PTPWH (2X5)
# 2	7-627-554-07	PRECISION SCREW +P 2X2.2 TYPE3
# 3	7-627-553-48	PRECISION SCREW +P 2X4 TYPE 3
# 4	7-627-553-37	SCREW (M2X3), SPECIAL HEAD
# 5	7-627-553-68	PRECISION SCREW +P 2X6 TYPE3
# 7	7-627-555-88	SCREW (M1.4X1.8)
# 8	7-621-255-25	SCREW +BVTT 2X4 (S)
# 9	7-621-255-15	SCREW +P 2X3
#10	7-627-553-47	PRECISION SCREW +P 2X4
#11	7-621-281-15	SCREW +P 2X2
#12	7-671-155-01	STEEL BALL 3.0

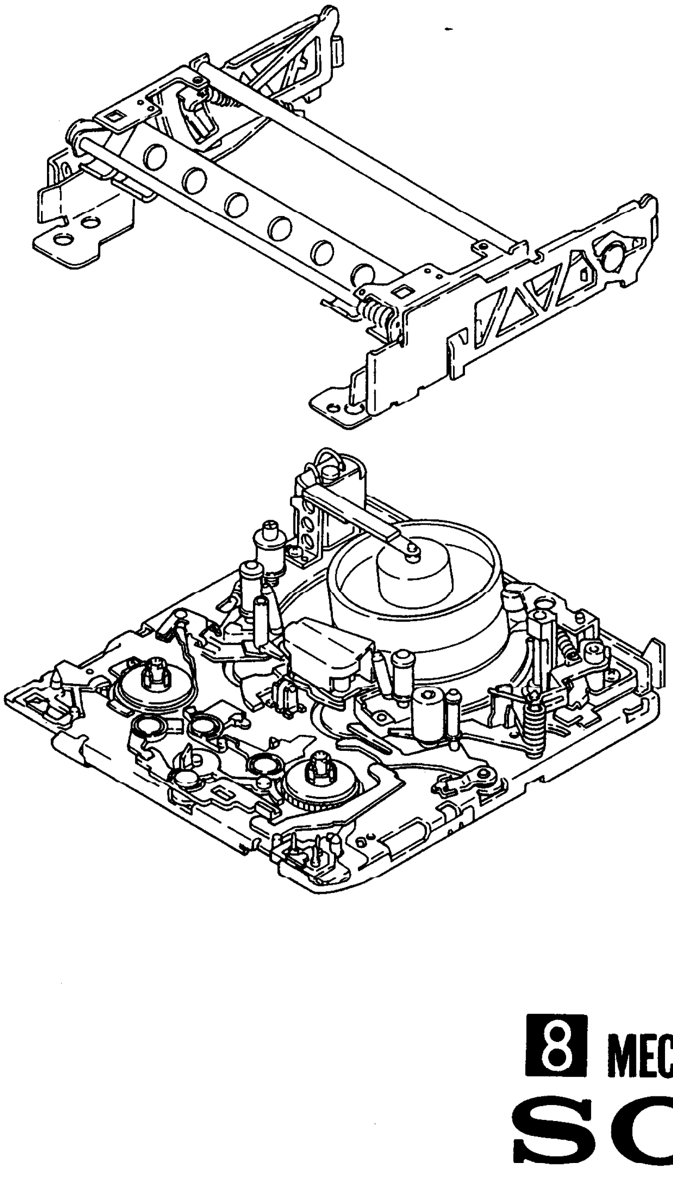
****

mm Video MECHANICAL ADJUSTMENT MANUAL III

U MECHANISM

Video 8

Please use in conjunction with the SERVICE MANUAL.



8 MECHANISM DECK

SONY®

TABLE OF CONTENTS

Section Title Page

1. PREPARATIONS FOR MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

1-1. Operation without Cassette Compartment Assembly and Tape 3
1-1-1. How to Trigger the Loading Operation 3
1-1-2. Setting the Playback Mode 3
1-1-3. Eject Operation 3
1-2. The Mode Selector 4
1-2-1. Name of Each Part (external) 4
1-2-2. Connections 4
1-2-3. Handling 4

2. PERIODICAL CHECK AND MAINTENANCE

2-1. Rotary Drum Assembly Cleaning 5
2-2. Tape Path Cleaning 5
2-3. Drive System Cleaning 5
2-4. Periodical Check Items 6
2-5. Servicing Tools 7

3. MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

3-1. HC Roller Assembly 8
3-2. Guide Guard Assembly 8
3-3. DC Motor (Capstan Motor) Assembly 9
3-4. S Brake, T Brake 10
3-5. LB Brake, Axle Holding Pins 11
3-6. LB Release Arm 12
3-7. RK Stopper, RK Stopper Arms 12
3-8. Pinch Arm Assembly, TG-7 Assembly 13
3-9. TG-2 Assembly 14
3-10. S Reel Table Assembly, T Reel Table Assembly 15
3-11. Tension Regulator Band Assembly, Tension Regulator Arm Assembly 16
3-12. Tension Regulator FWD Position Preset 17
3-13. Drum Assembly, Dew Sensor 18
3-14. Eject Lever, Switch Lever Assembly, Pinch Roller Sub Arm Assembly 19
3-15. Timing Belt (L), RC Gear Assembly, Loading Lever Assembly, Timing Belt (S), Connecting Gear Assembly 20
3-16. Idler Pulley, TS Brake Assembly, LB Gear Assembly, RK Gear Assembly 21
3-17. UL Gear, UL Brake, UL Arm, LB Plate Spring 22
3-18. Coaster (Right) Assembly, Drive Gear (Right) Assembly 23
3-19. Coaster (Left) Assembly, Drive Gear (Left) Assembly 24
3-20. Loading Motor, Brake Release Arm, Wheel Gear, Worm Assembly 25
3-21. Rotary Upper Drum Replacement 26
3-22. FWD Back Tension 27
3-23. Reel Torque Check 27

4. TAPE PATH ADJUSTMENT

4-1. Track Shift Mode Setting 28
4-2. Preparations for Adjustment 29
4-3. Tracking Adjustment 30
4-4. Tracking Fine Adjustment 30
4-5. No.2 Guide (TG-2) Adjustment 30
4-5-1. No.2 Guide (TG-2) Height Presetting 30
4-5-2. No.2 Guide (TG-2) Adjustment 31
4-6. No.7 Guide (TG-7) Adjustment 31
4-7. Cue and REV Waveform Check 31
4-8. Check After Adjustment 32
4-8-1. Tracking Check 32
4-8-2. Rising Check 32
4-8-3. Tape Path Check 32

1. PREPARATIONS FOR MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Note: For removal of the cabinet, the boards, the cassette compartment, etc., refer to the service guides.

1-1. OPERATION WITHOUT CASSETTE COMPARTMENT ASSEMBLY AND TAPE

Note: The unit will not work if exposed to a strong light.

1-1-1. How to Trigger the Loading Operation (See Fig. 1-1.)

1) Supply power to the unit after removing the cabinet, the camera block, the cassette compartment assembly, etc., as indicated in the service guides. (This will enable operation of the mechanical deck.)
2) Cover the LED assembly with an opaque cap, etc. ❶.
3) Attach a piece of tape to the RECOG switch ❷ so that the pin is held down.
4) Push the EJECT lever ❸ in the direction of the arrow Ⓐ.

1-1-2. Setting the Playback Mode (See Fig. 1-1.)

1) Follow the procedures in section 1-1-1. above.
2) Put the rubber band ❹ around the S and T reels.
3) Press the PLAY switch of unit, then push the tension regulator arm assembly ❺ in the direction of the arrow Ⓑ when the T reel starts to rotate (the tension regulator band will be released, and the S reel will start rotating).
4) To stop operation, press the STOP switch.

1-1-3. Eject Operation (See Fig. 1-1.)

1) To eject, turn the EJECT switch on.

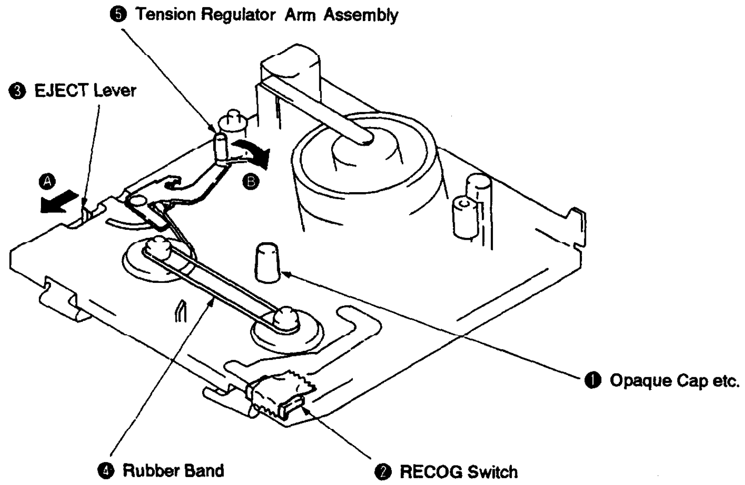


Fig. 1-1.

1-2. THE MODE SELECTOR

1-2-1. Name of Each Part (external) (See Fig. 1-2.)

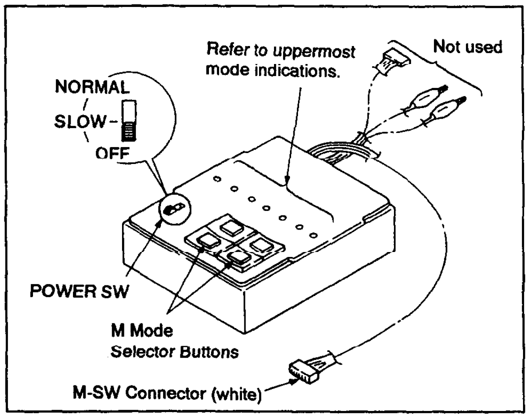

Refer to uppermost mode indications.
Not used
NORMAL
SLOW
OFF
POWER SW
M Mode Selector Buttons
M-SW Connector (white)

Fig. 1-2.

1-2-2. Connections (See Fig. 1-3.)

1) Mount the MODE SELECTOR III panel (Ref. No. J-9) ❶ onto the mode selector.
2) Attach the conversion connector (Ref. No. J-8) ❸ of MODE SELECTOR III to the 6-pin connector (white) ❷ of the mode selector M-SW.
3) Remove the FP-89 flexible board ❺ from the flexible connector ❹.
4) Attach the FP-89 flexible board ❺ to the flexible connector ❻ of the MODE SELECTOR III conversion connector ❸, then attach the 2-pin connector (white) ❽ of the loading motor to the 2-pin connector (white) ❼.

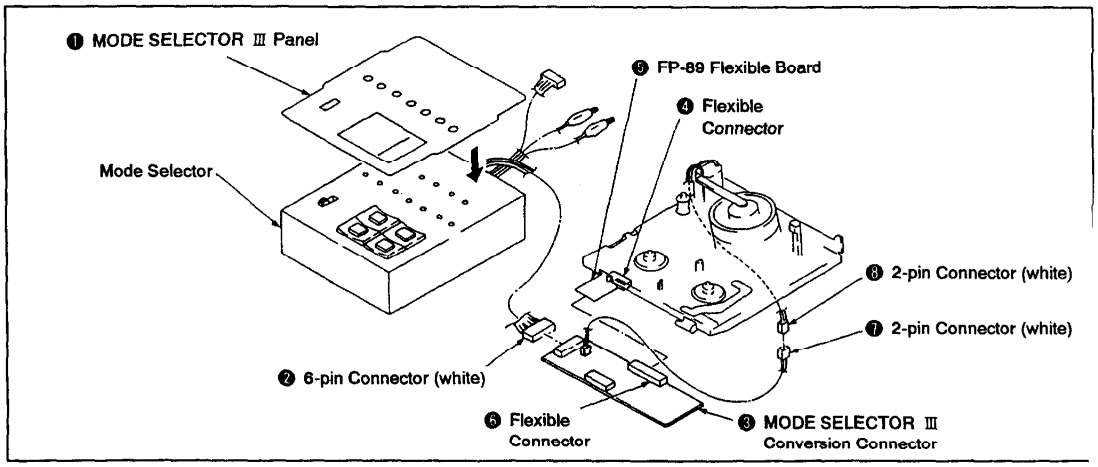

❶ MODE SELECTOR Ⅲ Panel
Mode Selector
❺ FP-89 Flexible Board
❹ Flexible Connector
❽ 2-pin Connector (white)
❼ 2-pin Connector (white)
❷ 6-pin Connector (white)
❻ Flexible Connector
❸ MODE SELECTOR Ⅲ Conversion Connector

Fig. 1-3.

1-2-3. Handling (See Figs. 1-2. and 1-4.)

- Use only the M mode selector buttons.
- Refer to mode indications on the uppermost part of the MODE SELECTOR III panel.
- If the right M mode selector button is kept pressed, the lit indication will change in the order of EJECT → (IA) → ULD → (IB) → STOP → (IC) → FWD.
- To change modes in the reverse direction (from FWD to EJECT), press the left selector button.

Note: For this U mechanism, the uppermost indicators on the MODE SELECTOR III panel are used. The IA, IB and IC indications light up during mode changes.

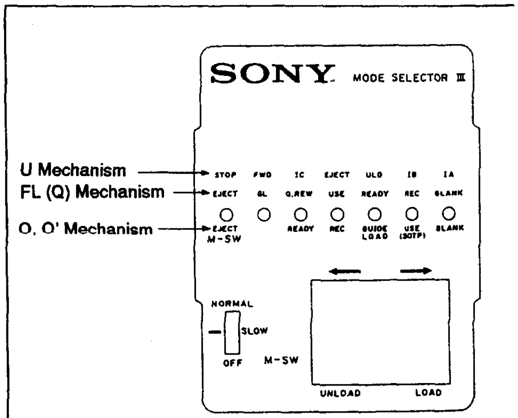

SONY MODE SELECTOR Ⅲ
U Mechanism
FL (Q) Mechanism
O, O' Mechanism
STOP
FWD
IC
EJECT
ULD
IB
IA
EJECT
GL
Q.REW
USE
READY
REC
BLANK
EJECT
M-SW
READY
REC
GUIDE LOAD
USE (SOTP)
BLANK
NORMAL
SLOW
OFF
M-SW
UNLOAD
LOAD

Fig. 1-4.

2. PERIODICAL CHECK AND MAINTENANCE (See Fig. 2-1.)

The following periodical check and maintenance procedures are necessary to ensure proper operation and to protect the tapes as well as the unit, and the following maintenance procedures must be always carried out after repairing regardless of how long the unit has been used.

2-1. ROTARY DRUM ASSEMBLY CLEANING

1) While pressing a piece of chamois leather (Ref. No. J-2) moistened in cleaning fluid (Ref. No. J-1) lightly against the rotary drum, turn the rotary upper drum slowly counter-clockwise with your fingers.

Note: Do not drive the drum with the motor, and do not turn it clockwise.
Do not move the chamois leather vertically against the head tip; this can damage the head tip. Strictly follow the cleaning instructions above.

2-2. TAPE PATH CLEANING

1) Set the cassette compartment assembly to the eject state, or remove it. Then clean the tape path (guides No. 1 to 7, capstan shaft, pinch rollers) with a piece of chamois leather moistened in cleaning fluid (See Fig. 2-1).

2-3. DRIVE SYSTEM CLEANING

1) Clean the drive system (timing belt, reel table surface) with a piece of cloth moistened in cleaning fluid.

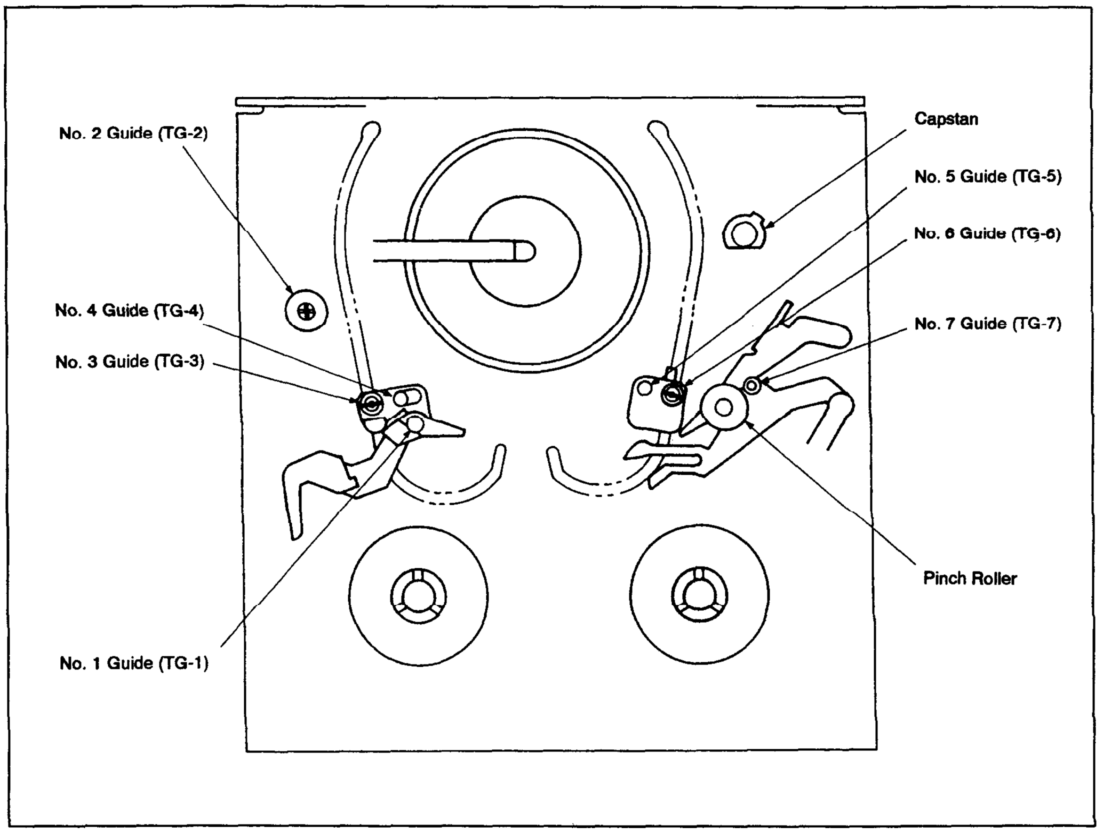


Fig. 2-1.

2-4. PERIODICAL CHECK ITEMS

○Cleaning ◎Lubrication ☆Check

Maintenance and Check Item		Operation time (H)										Remarks
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Cleaning and Demag-netizing	Tape path surfaces Cleaning	○	○	○	○	○	○	○	○	○	○	Do not oil.
	Rotary drum assembly cleaning and demagnetizing	○	○	○	○	○	○	○	○	○	○	Do not oil.
Drive System	Relay belt (short)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-866-01
	Relay belt (long)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-865-01
	Capstan shaft	–	◎	–	◎	–	◎	–	◎	–	◎	Take care that no oil gets on tape path surfaces.
	Idler pulley axle	–	◎	–	◎	–	◎	–	◎	–	◎	
	Loading motor	–	☆	–	☆	–	☆	–	☆	–	☆	1-541-612-11
Perfor-mance Check	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	–	☆	–	☆	–	☆	–	☆	–	☆	
	Brake system	–	☆	–	☆	–	☆	–	☆	–	☆	
	FWD, RVS torque measurement	–	☆	–	☆	–	☆	–	☆	–	☆	

Notes: When overhauling the unit, perform parts replacement referring to the table above.

Regarding Oil:

- Always use the specified oil (using oil of different viscosity, etc. can cause troubles of several kinds).
  Specified oil: Part No. 7-661-018-01
  (Mitsubishi Diamond Oil Hydrofluid EP56)
- Be sure that no dirt is mixed in the oil to be used on axle bearings. Use of dirty oil can result in bearing wear and burning.
- By "one drop of oil" is meant the quantity of oil adhering to the end of a a 2mm-diameter rod as shown in Fig. 2-2.

On grease:

- Use the specified grease.
  Grease: Part No. 7-662-010-08
  (Sony grease SGL-701)

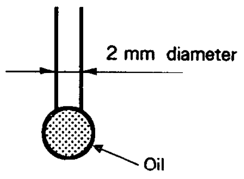


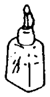
Fig. 2-2.

2-5. SERVICING TOOLS

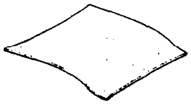
Ref. No.	Name	Part Code	Marking	Application, etc.
J-1	Cleaning fluid	Y-2031-001-0	–	
J-2	Chamois cloth	2-034-697-00	–	
J-3	Head demagnetizer	Commercially available	–	
J-4	Dental mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-5	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-6	FWD/RVS takeup torque cassette	J-6080-624-A	GD-2086	
J-7	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-8	Mode selector III conversion connector	J-6082-021-A		General
J-9	Mode selector III panel	J-6082-023-A		General
J-10	Mode selector	J-6080-825-A		General
J-11	Hexagonal wrench detection (0.89 mm) or L wrench (0.89 mm)	7-700-766-01 7-700-736-06		Tape path
J-12	Sony grease (SGL-701)	7-662-010-08		

Other devices: Oscilloscope
Analog tester (20 kΩ)

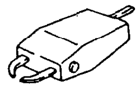
J-1



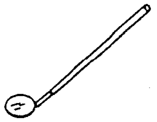
J-2



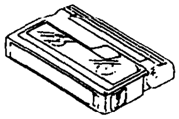
J-3



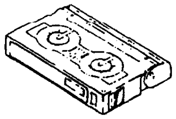
J-4



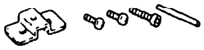
J-5



J-6

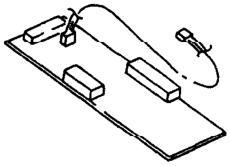


J-7

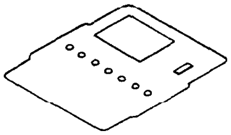


(Attached to the maintenance rotary upper drum)

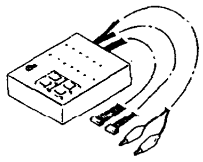
J-8



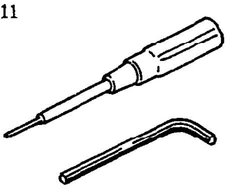
J-9



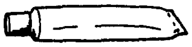
J-10



J-11



J-12



3. MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Notes:
- Use the mode selector (Ref. No. J-10) for procedures in this chapter.
- Modes within a frame ☐ are those set by pressing the buttons of the mode selector.

3-1. HC ROLLER ASSEMBLY

1. Removal (See Fig. 3-1.)

1) Remove the screw ❶, then remove the HC roller assembly ❷.

2. Installation (See Fig. 3-1.)

1) Align the two dowels ❸ attached to the HC roller assembly ❷ with the two holes ❹ in the mechanism chassis.
2) Secure the HC roller assembly ❷ with the screw ❶.

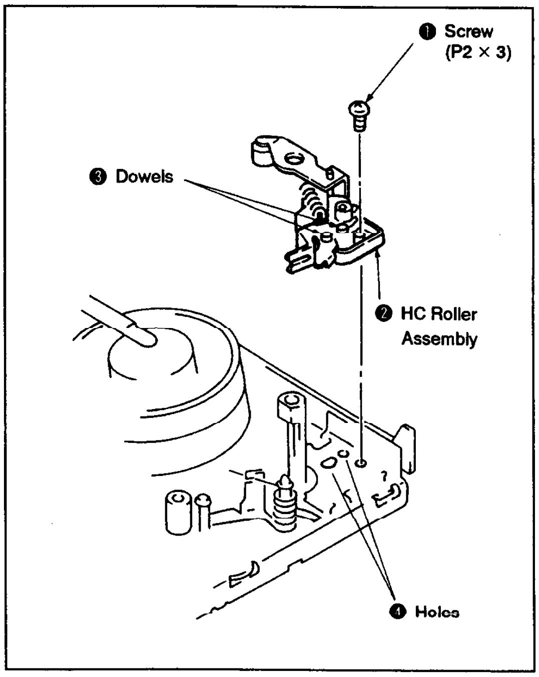

❶ Screw (P2 × 3)
❸ Dowels
❷ HC Roller Assembly
❹ Holes

Fig. 3-1.

3-2. GUIDE GUARD ASSEMBLY

1. Removal (See Fig. 3-2.)

Remove the screw ❶, then remove the guide guard assembly ❷.

2. Installation (See Fig. 3-2.)

1) Align the dowel ❸ attached to the guide guard assembly ❷ with the hole ❹.
2) Secure the guide guard assembly ❷ with the screw ❶.

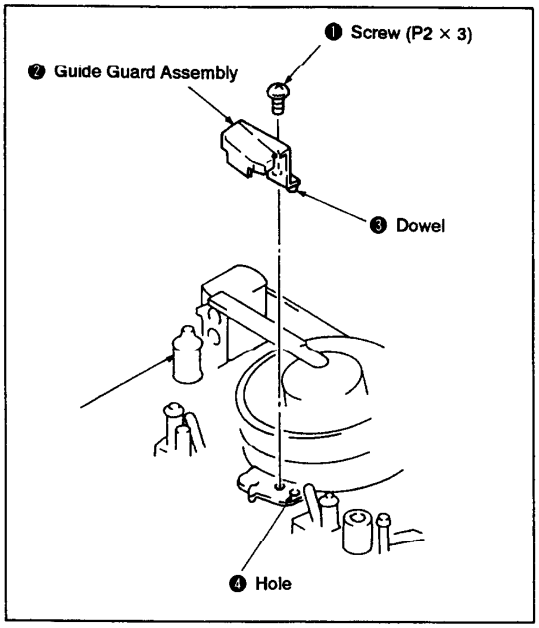

❶ Screw (P2 × 3)
❷ Guide Guard Assembly
❸ Dowel
❹ Hole

Fig. 3-2.

3-3. DC MOTOR (CAPSTAN MOTOR) ASSEMBLY

1. Removal (See Fig. 3-3.)

1) Set the ULD mode.
2) Turn the stopper ❶ in the direction of the arrow Ⓐ as far as it will go.
3) Remove the two screws ❷, then remove the DC motor ❸.

2. Installation (See Fig. 3-3.)

1) Align the two screwed dowels ❹ with the two holes ❺, then engage the toothed part ❻ with the connecting gear ❼.
2) Secure the DC motor assembly ❸ with the two screws ❷.
3) Turn the stopper ❶ in the direction of the arrow Ⓑ as far as it will go.

Note:
- When engaging the gears, take care not to damage their teeth.
- Do not leave any clearance between the DC motor ❸ and the chassis.
- Do not touch the capstan motor axle*, the oil seal* and the rotor*.

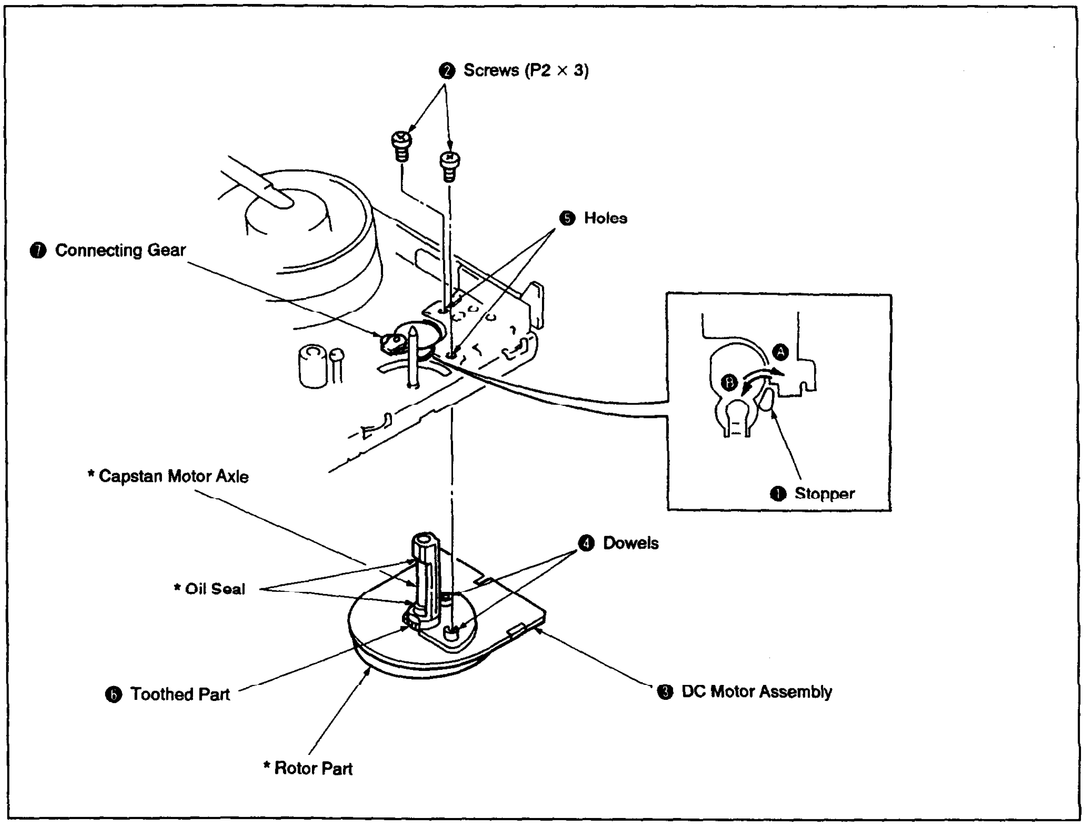

❷ Screws (P2 × 3)
❺ Holes
❼ Connecting Gear
Ⓐ
Ⓑ
❶ Stopper
* Capstan Motor Axle
❹ Dowels
* Oil Seal
❻ Toothed Part
❸ DC Motor Assembly
* Rotor Part

Fig. 3-3.

3-4. S BRAKE, T BRAKE

1. Removal (See Fig. 3-4.)

1) Remove the torsion coil spring (ST) ❶.
2) Remove the axle holding pin ❷, then remove the T brake ❸.
3) Remove the axle holding pin ❹, then remove the S brake ❺.

2. Installation (See Fig. 3-4.)

1) While fitting the toothed part ❻ into the notch ❼, mount the S brake ❺.
2) Insert the axle holding pin ❹.
3) Insert the axle ❽ to the S reel side of the brake release arm ❾ so that the Ⓐ part comes closer to the drum than part Ⓑ, and mount the T brake ❸.
4) Insert the axle holding pin ❷.
5) Insert the torsion coil spring (ST) ❶ below the claw ⓫ of the axle ❿, then hook it to two claws ⓬.

Note: Confirm that the claws of axle holding pins ❷ and ❹ are not broken before assembling.

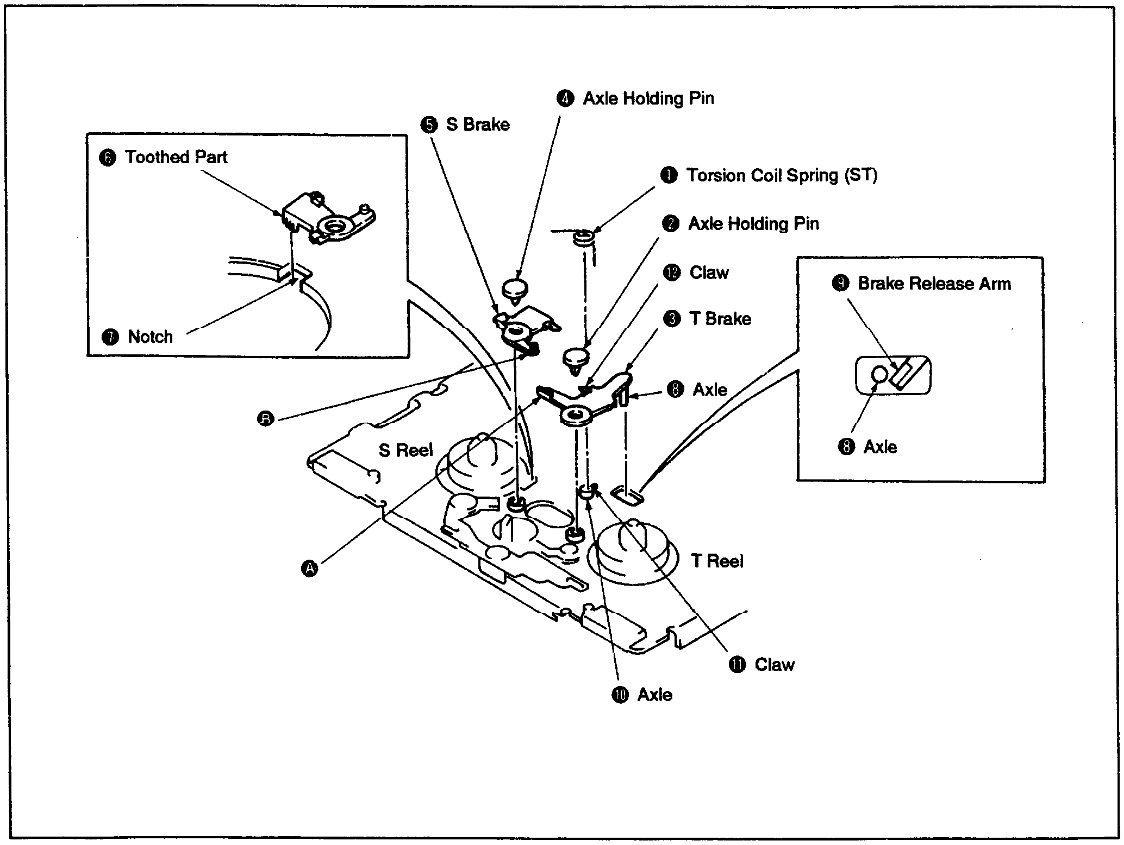

❹ Axle Holding Pin
❺ S Brake
❻ Toothed Part
❼ Notch
❶ Torsion Coil Spring (ST)
❷ Axle Holding Pin
⓬ Claw
❸ T Brake
❾ Brake Release Arm
❽ Axle
Ⓑ
S Reel
❽ Axle
Ⓐ
T Reel
⓫ Claw
❿ Axle

Fig. 3-4.

3-5. LB BRAKE, AXLE HOLDING PINS

1. Removal (See Fig. 3-5.)

1) Remove the screw ❶, then remove the TL holding plate ❷.
2) Remove the axle holding pin ❸, then remove the LB brake ❹.
3) Remove the axle holding pin ❺, then remove the LB lever ❻.

2. Installation (See Fig. 3-5.)

1) Mount the LB lever ❻ matching it to pin ❼ of the LB gear, then secure it with the axle holding pin ❺.
2) Insert the pin ❽ into the notch ❾ of the LB lever ❻, then mount the LB brake ❹ while inserting the toothed part ❿ into the notch ⓫.
3) Insert the axle holding pin ❸.
4) Align the dowel ⓬ with the hole ⓭, then mount the TL holding plate and secure it with the screw ❶.

Note: Confirm that the claws of axle holding pins ❸ and ❺ are not broken before assembling.

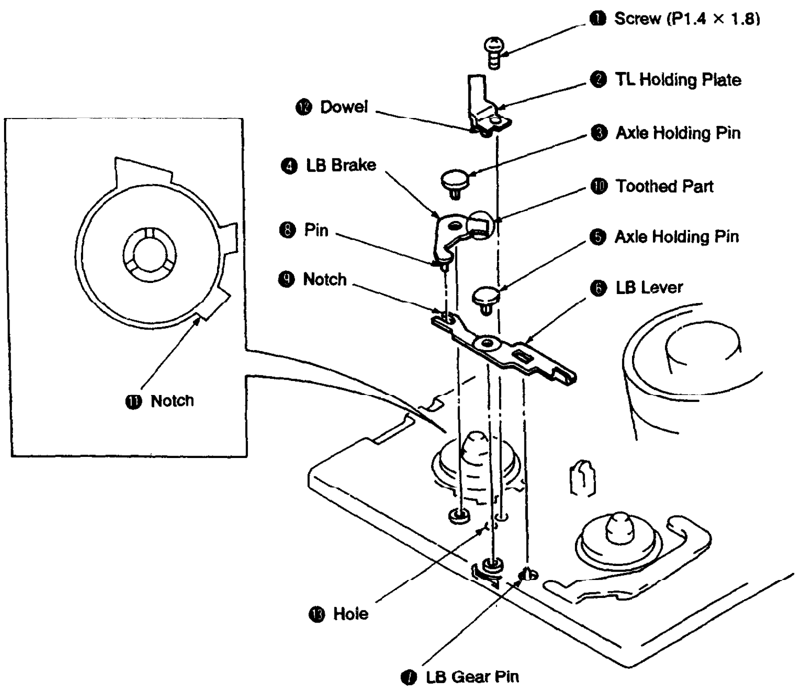

❶ Screw (P1.4 × 1.8)
❷ TL Holding Plate
⓬ Dowel
❸ Axle Holding Pin
❹ LB Brake
❿ Toothed Part
❽ Pin
❺ Axle Holding Pin
❾ Notch
❻ LB Lever
⓫ Notch
⓭ Hole
❼ LB Gear Pin

Fig. 3-5.

3-6. LB RELEASE ARM

1. Removal (See Fig. 3-6.)

1) While pushing the claw ① in the direction of the arrow, remove the LB release arm ②.

2. Installation (See Fig. 3-6.)

1) Fit the LB release arm ② to the axle ③, insert protrusions ⓐ, ⓑ, ⓒ, ⓓ into the three holes ④, then secure with the claw ①.

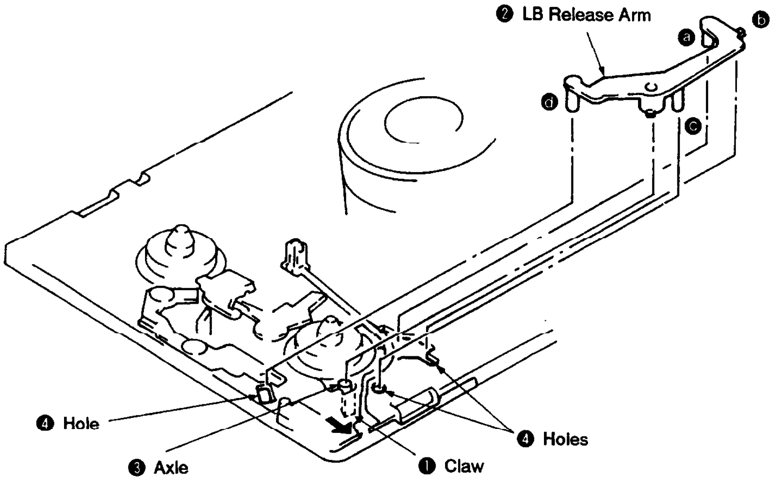

② LB Release Arm
ⓐ
ⓑ
ⓒ
ⓓ
④ Hole
③ Axle
④ Holes
① Claw

Fig. 3-6.

3-7. RK STOPPER, RK STOPPER ARMS

1. Removal (See Fig, 3-7.)

1) Remove the torsion coil spring (RK) ①.
2) Open the chassis claw ②, then remove the RK stopper arm ③.
3) Remove the RK stopper ④.

2. Installation (See Fig. 3-7.)

1) Mount the RK stopper ④ onto the axle ⑤.
2) Mount the RK stopper arm ③ onto the axle ⑥, insert Pin ⑩ into hole ⑪, then hook the claw ② of the chassis to the hole ⑦.
3) Insert the torsion coil spring (RK) ① into the axle ⑤, then hook it to claws ⑧ and ⑨.

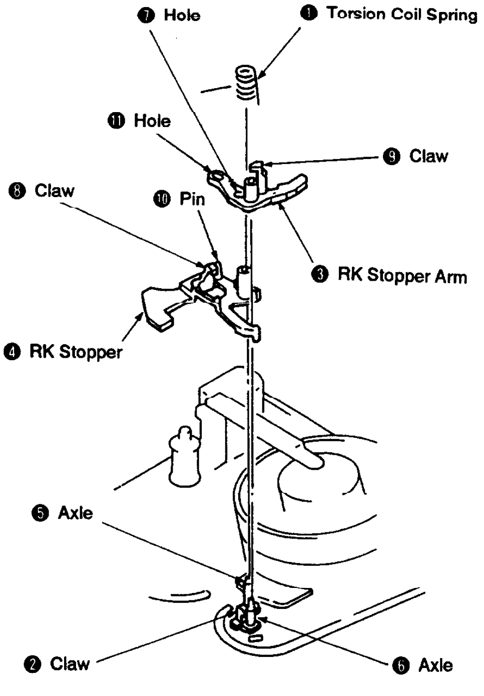

⑦ Hole
① Torsion Coil Spring
⑪ Hole
⑨ Claw
⑧ Claw
⑩ Pin
③ RK Stopper Arm
④ RK Stopper
⑤ Axle
② Claw
⑥ Axle

Fig. 3-7.

3-8. PINCH ARM ASSEMBLY, TG-7 ASSEMBLY

1. Removal (See Fig. 3-8.)

1) Set the IB mode.
2) Remove the stopper washer ❶, then remove the pinch arm assembly ❷.
3) Bend the claw ❹ inside hole ❸ in the direction of the arrow using a thin screwdriver or the like, then remove the TG-7 plate spring ❺.
4) Remove the TG-7 arm assembly ❻.

2. Installation (See Fig. 3-8.)

1) Grease the inner surfaces of hole ❼ (See Fig. A).
2) Insert the axle ❽ of the TG-7 arm assembly ❻ into the hole ❼.
3) Grease the shaded section ⓐ (See Fig. A).
4) Insert the TG-7 plate spring ❺ into the hole ❸, then secure it with the claw ❹.
5) Apply half a drop of oil to the axle ❾ (See Fig. B).
6) Fit the pinch arm assembly ❷ to the axle ❾ and insert the pinch roller sub arm assembly tab ❿ into the ⓑ part.
7) Install the stopper washer ❶.

Note:
- Take care not to grease the screw ⓫ of the TG-7 arm assembly ❻ (See Fig. A).
- When fitting the pinch arm assembly ❷ to the axle ❾, make sure that it does not touch the TG-7 guide ⓬ or the rubber roller ⓭.
- After assembling, be sure to perform tape path adjustment as described in section 4.

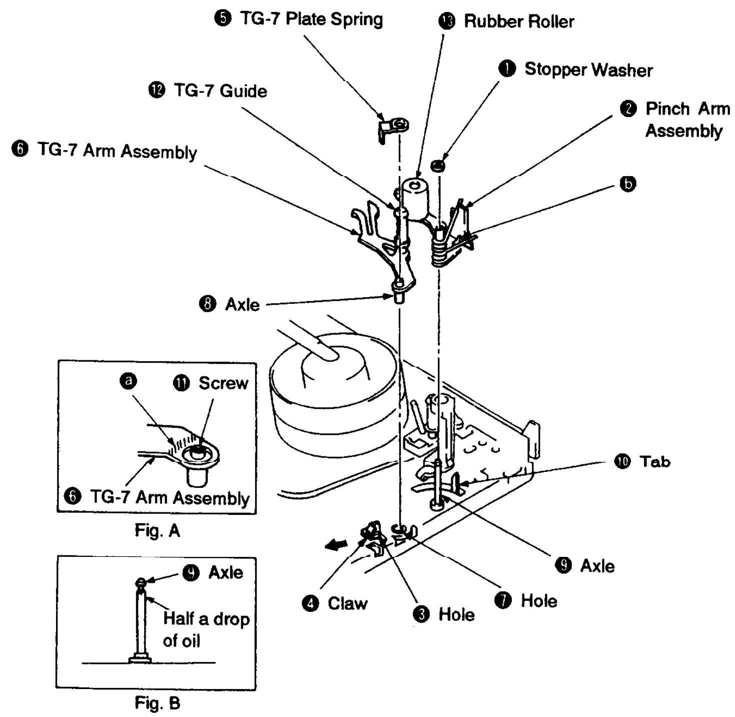

❺ TG-7 Plate Spring
⓭ Rubber Roller
❶ Stopper Washer
⓬ TG-7 Guide
❷ Pinch Arm Assembly
❻ TG-7 Arm Assembly
ⓑ
❽ Axle
ⓐ
⓫ Screw
❻ TG-7 Arm Assembly
❿ Tab
❾ Axle
❾ Axle
Half a drop of oil
❹ Claw
❸ Hole
❼ Hole

Fig. A

Fig. B

Fig. 3-8.

3-9. TG-2 ASSEMBLY

1. Removal (See Fig. 3-9.)

1) Remove the TG-2 upper flange assembly ❶.
2) Remove the TG-2 roller ❷, the TG-2 sleeve ❸, the TG-2 lower flange ❹ and the compression spring ❺.

2. Installation (See Fig. 3-9.)

1) Mount the compression spring ❺, the TG-2 lower flange ❹, the TG-2 sleeve ❸ and the TG-2 roller ❷ to the axle.
2) Secure the TG-2 upper flange ❶ to the axle by rotating it 4 to 6 turns.

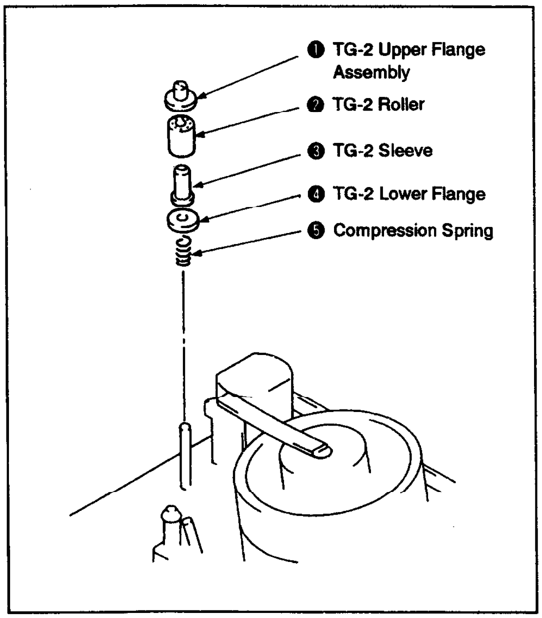

❶ TG-2 Upper Flange Assembly
❷ TG-2 Roller
❸ TG-2 Sleeve
❹ TG-2 Lower Flange
❺ Compression Spring

Fig. 3-9.

3. TG-2 Height Preset (see Fig. 3-10.)

1) Adjust height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by turning the TG-2 upper flange ❶.

Note: After adjustment, be sure to perform tape path adjustment as described in section 4.

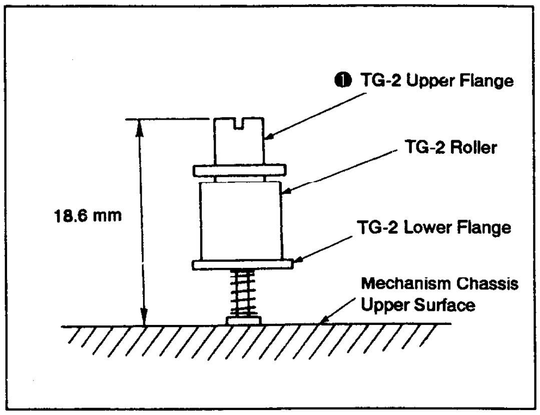

❶ TG-2 Upper Flange
TG-2 Roller
18.6 mm
TG-2 Lower Flange
Mechanism Chassis Upper Surface

Fig. 3-10.

3-10. S REEL TABLE ASSEMBLY, T REEL TABLE ASSEMBLY

1. Removal (See Fig. 3-11.)

1) Remove the S brake and T brake as described in section 3-4.
2) Remove the TL holding plate as described in section 3-5.
3) Remove the tension regulator band assembly as described in section 3-11.
4) Remove the S reel table assembly ❶.
5) Turn the stopper ❷ approx. 90 ° in the direction of the arrow Ⓐ.
6) While sliding the LB release arm ❸ in the direction of the arrow Ⓑ, remove the T reel table assembly ❹.

2. Installation (See Fig. 3-11.)

1) Apply half a drop of oil to the axle ❺ (See Fig. A).
2) Move the RK gear ❻ in the direction of the arrow Ⓒ and the TS brake ❼ in the direction of the arrow Ⓓ, putting them out of the way.
3) While sliding the LB release arm ❸ in the direction of the arrow Ⓑ, mount the T reel table assembly ❹ onto the axle ❺, then turn the stopper ❷ in the direction of the arrow Ⓔ as far as it will go.
4) Apply half a drop of oil to the axle ❽ (See Fig. B).
5) Move the RK gear ❻ in the direction of the arrow Ⓕ, the UL brake ❾ in the direction of the arrow Ⓖ and the LB brake ❿ in the direction of the arrow Ⓗ, putting them out of the way.
6) Mount the S reel table ❶ onto the axle ❽.
7) Mount the tension regulator band assembly as described in section 3-11.
8) Mount the TL holding plate as described in section 3-5.
9) Mount the S brake and T brake assemblies as described in section 3-4.

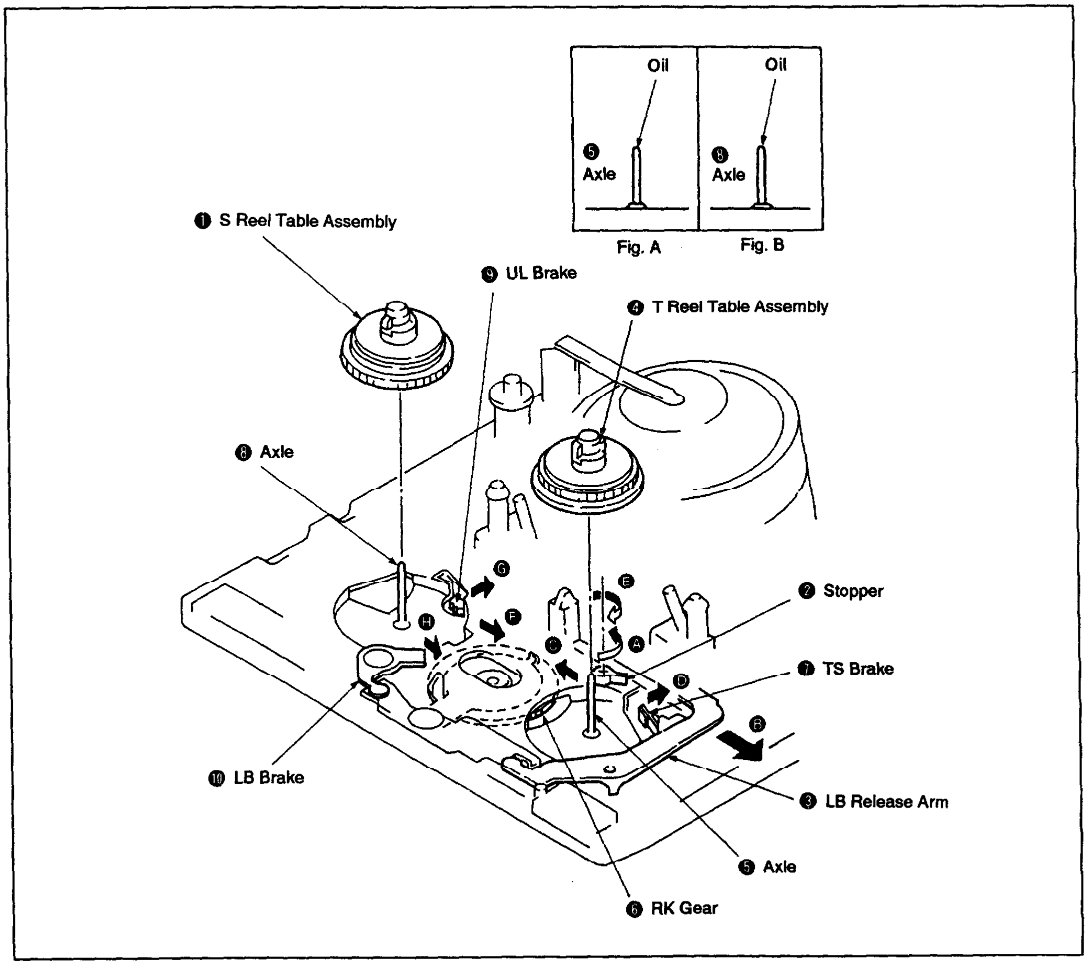

Oil
❺ Axle
Fig. A
Oil
❽ Axle
Fig. B
❶ S Reel Table Assembly
❾ UL Brake
❹ T Reel Table Assembly
❽ Axle
Ⓖ
Ⓕ
Ⓗ
Ⓔ
Ⓒ
Ⓐ
Ⓓ
Ⓑ
❷ Stopper
❼ TS Brake
❿ LB Brake
❸ LB Release Arm
❺ Axle
❻ RK Gear

Fig. 3-11.

3-11. TENSION REGULATOR BAND ASSEMBLY, TENSION REGULATOR ARM ASSEMBLY

1. Removal (See Fig. 3-12.)

1) Remove the TL holding plate as described in section 3-5.
2) Remove the screw ❶.
3) Using a thin screwdriver or the like, remove the tension regulator band assembly ❹ from the axle ❸ of tension regulator arm assembly ❷.
4) Remove the tension spring ❺.
5) Remove the stopper washer ❻ from the back of the mechanism chassis, then remove the tension regulator arm assembly ❷.
6) Open the claw ❼, then remove the adjust arm ❽.

Note: When removing the tension regulator band assembly ❹, take care not to twist or bend it, and not to touch the felt surface ❾.

2. Installation (See Fig. 3-12.)

1) Engage the adjust arm ❽ in the position shown in Fig. A, then close the claw ❼.
2) Apply half a drop of oil to the hole ❿.
3) Mount the tension regulator arm assembly ❷, then insert it into the slot ⓫ so that the ⓐ part comes to the arrow Ⓐ side of the switch lever assembly (See Fig. B).
4) While holding the tension regulator arm assembly ❷ from the mechanism chassis front, secure it with the stopper washer ❻ from the back.
5) Hook the R hook of the tension spring ❻ to the adjust arm ❽ as shown in the figure, then hook the opposite end to the tension regulator arm assembly ❷.
6) Mount the tension regulator band assembly ❹ onto the axle ❸ of tension regulator arm assembly ❷, and place it so that the felt surface ❾ comes against the shaded portion of the S reel table assembly ⓬.
7) Mount the tension regulator plate ⓭ of the tension regulator band assembly ❹ so that it is aligned with the dowel ⓮ of the mechanism chassis, then secure it temporarily with the screw ❶.
8) Mount the TL holding plate as described in section 3-5.
9) Adjust tension regulator FWD position as described in section 3-12.
10) Perform adjust arm adjustment as described in section 3-22.

Note: When mounting the tension regulator band assembly ❷, take care not to twist or bend it, and not to touch the felt surface ❾.

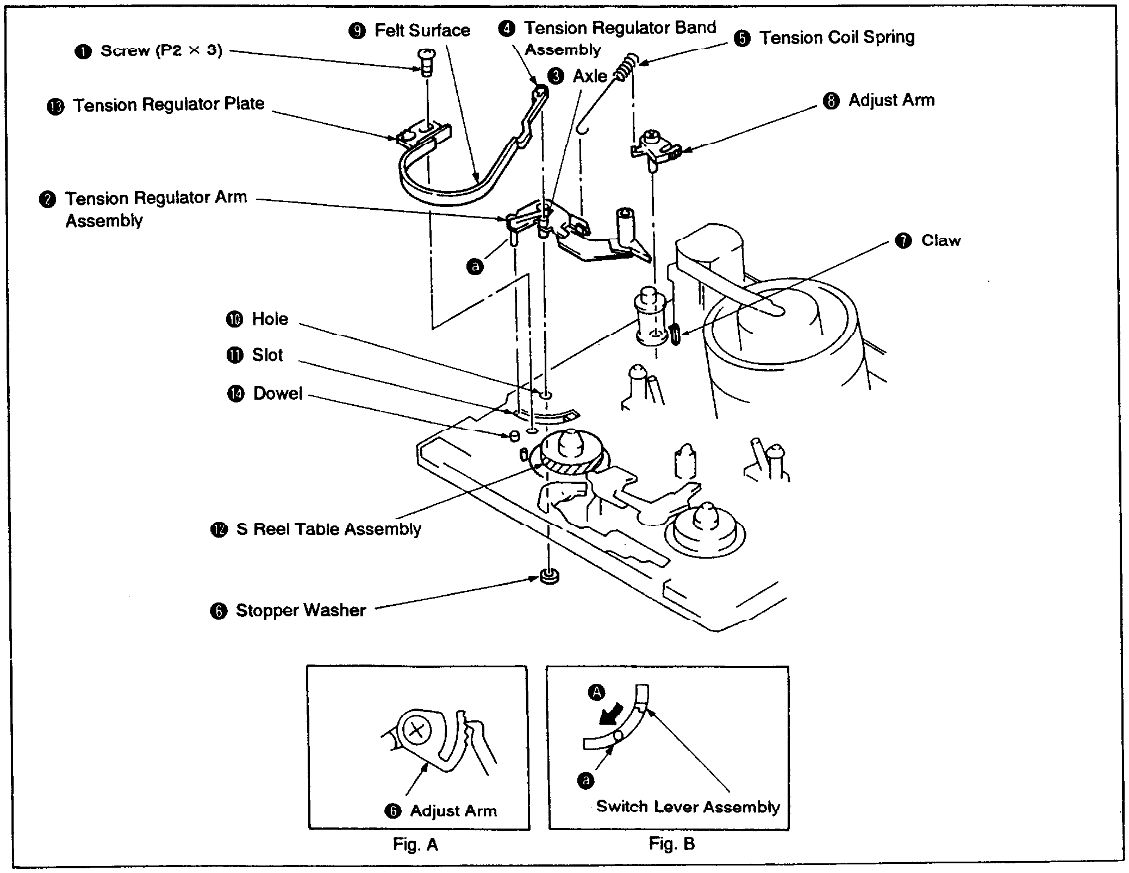

❶ Screw (P2 × 3)
❾ Felt Surface
❹ Tension Regulator Band Assembly
❺ Tension Coil Spring
❸ Axle
⓭ Tension Regulator Plate
❽ Adjust Arm
❷ Tension Regulator Arm Assembly
ⓐ
❼ Claw
❿ Hole
⓫ Slot
⓮ Dowel
⓬ S Reel Table Assembly
❻ Stopper Washer
❻ Adjust Arm
Ⓐ
ⓐ
Switch Lever Assembly

Fig. A

Fig. B

Fig. 3-12.

3-12. TENSION REGULATOR FWD POSITION PRESET (See Fig. 3-13.)

1) Load a cassette tape and set the `FWD` mode.
2) Confirm whether the distance between ⓐ part of the tension regulator arm ❶ and the groove ❷ of the chassis is 1.1 ± 0.3 mm. If this distance is not within the specified range, remove the cassette tape and perform the following adjustment.
3) Loosen the fixing screw ❹ of the tension regulator band assembly ❸.
4) Slide the tension regulator plate ❺ in the direction of the arrow Ⓐ if the measured distance is over the specified range, and in the direction of the arrow Ⓑ if it is under that range. Then, fix it with the screw ❹.
5) Repeat steps 1) and 2) and confirm that the distance is within the specified range.

Note: Use a cassette with the tape advanced halfway.

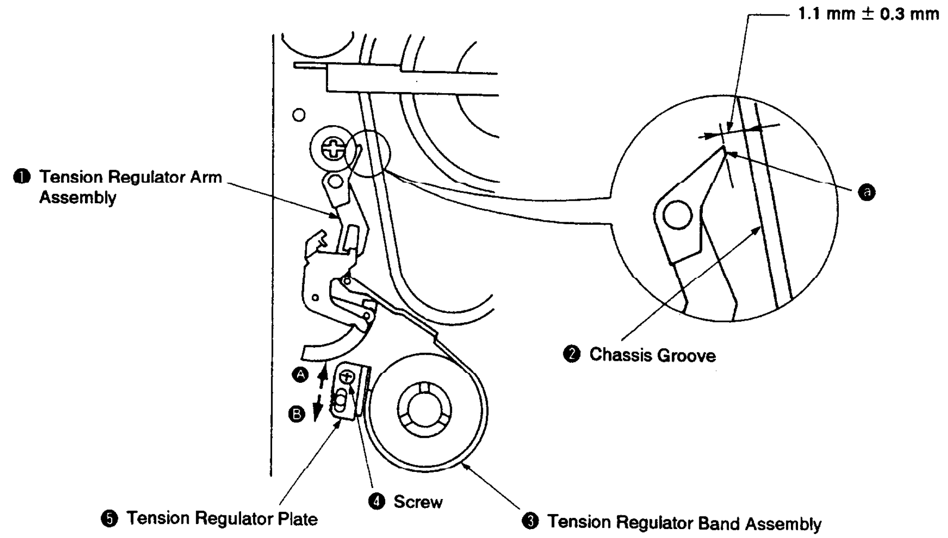

1.1 mm ± 0.3 mm
❶ Tension Regulator Arm Assembly
ⓐ
❷ Chassis Groove
Ⓐ
Ⓑ
❹ Screw
❺ Tension Regulator Plate
❸ Tension Regulator Band Assembly

Fig. 3-13.

3-13. DRUM ASSEMBLY, DEW SENSOR

1. Removal (See Fig. 3-14.)

1) Set the EJECT mode.
2) Remove the flexible board ❶ and the two connectors ❷.
3) Remove the guide guard assembly as described in section 3-2.
4) Remove the screw ❸, then remove the axle ground terminal ❹.
5) Remove the three screws ❺, then remove the drum assembly ❻ from the mechanism chassis.
6) Remove the connector ❿
7) Remove the screw ❼, then remove the dew sensor ❽.

Note:
- When removing the drum assembly ❻ from the mechanism chassis, take care not to cut the flexible board ❶ or the harness.
- Take care not to touch the head tip ❾.

2. Installation (See Fig. 3-14.)

1) Insert part 🅐 of the dew sensor ❽ into the notch ⓫ of the mechanism chassis, then secure it with the screw ❼.
2) Mount the connector ❿.
3) Clamp the harness ⓯ of the dew sensor ❽ with the reinforcing the claw ⓰ of the plate SS assembly (See Fig. A).
4) Insert the connector ❷ and the flexible board ❶ into the hole ⓬ of the mechanism chassis, align the drum assembly ❻ with the two dowels ⓭ and secure it with the three screws ❺.
5) Align the axle ground terminal ❷ with the two dowels ⓮ of the mechanism chassis and secure it with the screw ❸.
6) Mount the guide guard assembly as described in section 3-2.
7) Mount the two connectors ❷ and the flexible board ❶.

Note:
- Take care not to cut the flexible board ❶ or the harness ⓯.
- Take care not to touch the head tip ❾.
- After assembling, be sure to perform Tape Path Adjustment following instructions in section 4.

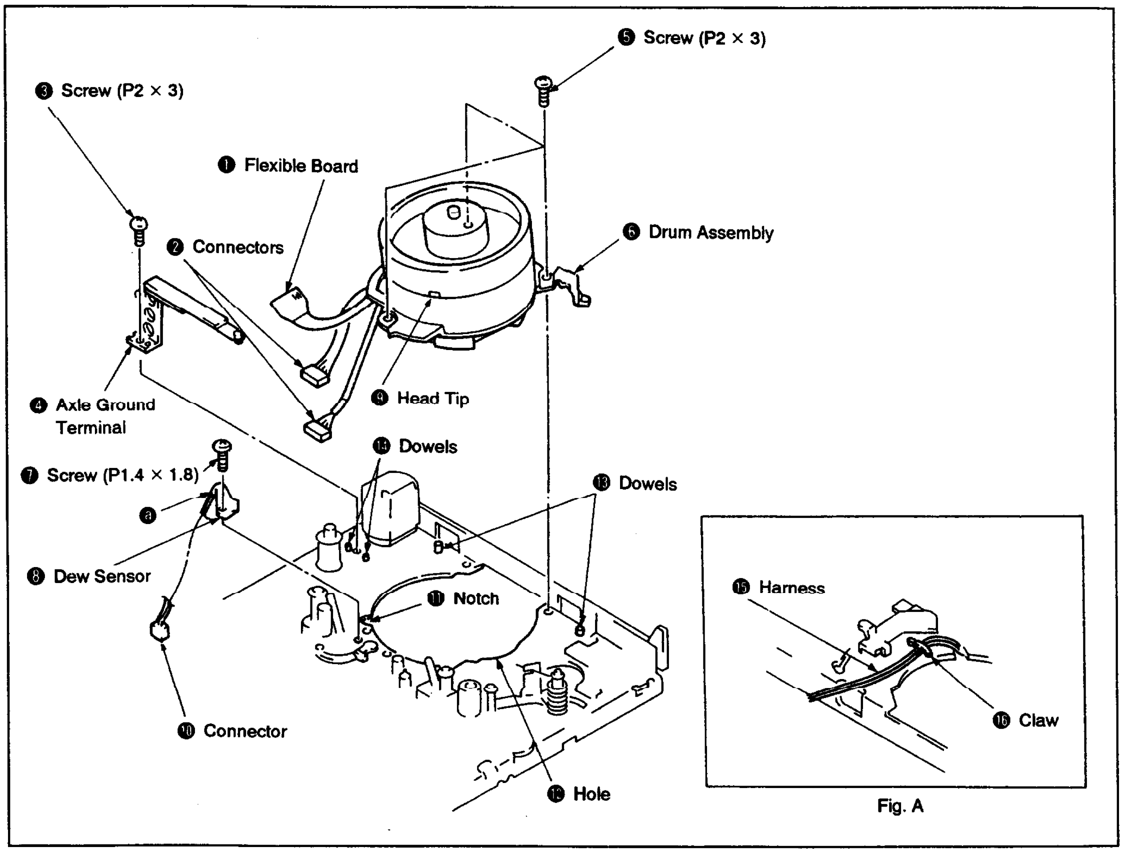

❺ Screw (P2 × 3)
❸ Screw (P2 × 3)
❶ Flexible Board
❷ Connectors
❻ Drum Assembly
❹ Axle Ground Terminal
❾ Head Tip
⓮ Dowels
❼ Screw (P1.4 × 1.8)
⓭ Dowels
ⓐ
❽ Dew Sensor
⓫ Notch
⓯ Harness
❿ Connector
⓰ Claw
⓬ Hole
Fig. A

Fig. 3-14.

3-14. EJECT LEVER, SWITCH LEVER ASSEMBLY, PINCH ROLLER SUB ARM ASSEMBLY

1. Removal (See Fig. 3-15.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Set the STOP mode.
3) Remove the claw ❶, then remove the eject lever ❷.
4) Remove the stopper washer ❸, then remove the switch lever assembly ❹.
5) Remove the pinch roller load spring ❺.
6) Remove the stopper washer ❻, then remove the pinch roller sub arm assembly ❼.

2. Installation (See Fig. 3-15.)

1) Grease the axle ❽ (See Fig. A).
2) Assemble by inserting ⓐ part of the pinch roller sub arm assembly ❼ into the slot ❾, then insert the pin ❿ into the loading lever assembly notch ⓫.
3) Secure with the stopper washer ❻.
4) Mount the pinch roller load spring ❺ by catching its ⓑ end between the claw ⓬ and the chassis side and its ⓒ end to the claw ⓱.
5) Apply half a drop of oil to the axle ⓭ (See Fig. B).
6) Align the groove ⓮ of the switch lever assembly ❹ with the mode detector switch protrusion ⓯, mount it on the axle ⓭, then insert the pin ⓰ into the drive gear (left) assembly ⓱ outer groove.
7) Secure with the stopper washer ❸.
8) Mount the eject lever ❷ and close the claw ❶.
9) Mount the DC motor (capstan motor) as described in section 3-3.

Note: When mounting the switch lever assembly ❹ onto the axle ⓭ with the tension regulator arm assembly installed, set the pin ⓰ to the arrow Ⓐ side of the switch lever assembly ❹.

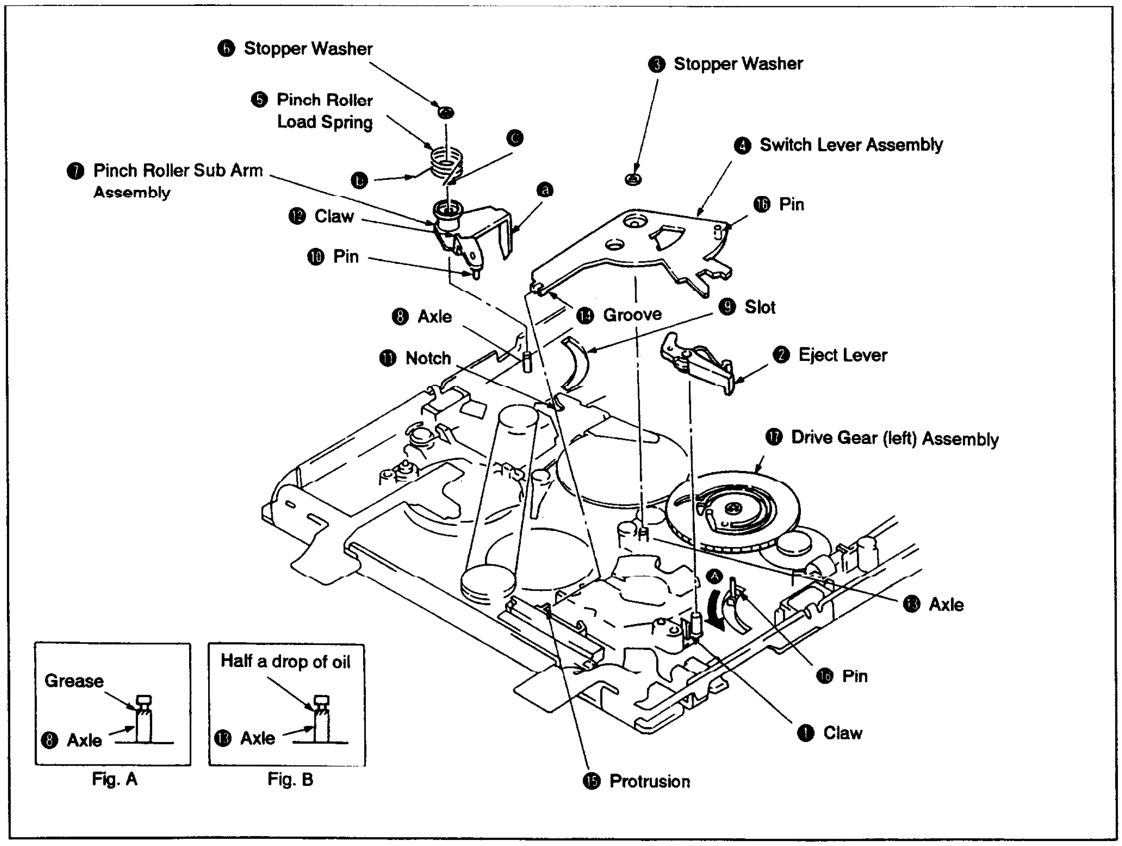

❻ Stopper Washer
❺ Pinch Roller Load Spring
❸ Stopper Washer
ⓒ
❹ Switch Lever Assembly
❼ Pinch Roller Sub Arm Assembly
ⓑ
ⓐ
⓰ Pin
⓬ Claw
❿ Pin
❽ Axle
⓮ Groove
❾ Slot
⓫ Notch
❷ Eject Lever
⓱ Drive Gear (left) Assembly
Ⓐ
⓭ Axle
⓰ Pin
❶ Claw
⓯ Protrusion
Grease
❽ Axle
Fig. A
Half a drop of oil
⓭ Axle
Fig. B

Fig. 3-15.

3-15. TIMING BELT (L) , RC GEAR ASSEMBLY, LOADING LEVER ASSEMBLY, TIMING BELT (S), CONNECTING GEAR ASSEMBLY

1. Removal (See Fig. 3-16.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the pinch roller sub arm assembly as described in section 3-14.
3) Set the STOP mode.
4) Remove the stopper washer ❶ , then remove the RC gear assembly ❷ from the axle ❹ with the timing belt (L) ❸ attached.
5) Remove the timing belt (L) ❸ from the idler pulley assembly ❺ .
6) Remove the stopper washer ❻ and remove the loading lever assembly ❽ while pushing the claw ❼ in the direction of the arrow 🅐 .
7) Turn the stopper ❾ approx. 90 ° in the direction of the arrow 🅑 .
8) Remove the connecting gear assembly ⓫ from the axle ⓰ with the timing belt (S) ❿ attached.
9) Remove the timing belt (S) ❿ from the idler pulley assembly ❺ .

Note: When removing the connecting gear ⓫ , take care not touch the flange section ⓑ .

2. Installation (See Fig. 3-16.)

1) Apply half a drop of oil to the axle ⓰ (See Fig. F).
2) Hook one end of the timing belt (S) ❿ onto the connecting gear assembly ⓫ and the other end onto gear ⓓ of the idler pulley assembly ❺ . (Refer to the figure.)
3) Mount the connecting gear assembly ⓫ with the timing belt (S) ❿ attached to the axle ⓰ .
4) Turn the stopper ❾ in the direction of the arrow 🅒 as far as it will go.
5) Apply half a drop of oil to the axle ⓬ (See Fig. A).
6) Fit the loading lever assembly ❽ to the axle ⓬ , secure the ⓐ part with the claw ❼ and place the pin ⓭ into the groove of the drive gear (right) assembly ⓮ .
7) Install the stopper washer ❻ .
8) Place the timing belt (L) ❸ around the gears of the RC gear assembly ❷ indicated in Fig. B, and its opposite side around the gear ⓒ of the idler pulley assembly ❺ . (See Fig. E.)
9) Mount the RC gear assembly ❷ onto the axle ❹ with the timing belt (L) ❸ attached, and engage it with the gear of the RK gear assembly ⓯ .
10) Install the stopper washer ❶ .
11) Grease parts of the loading lever assembly ❽ indicated in Fig. C.
12) Mount the pinch roller sub arm assembly as described in section 3-14.
13) Mount the DC motor (capstan motor) as described in section 3-3.

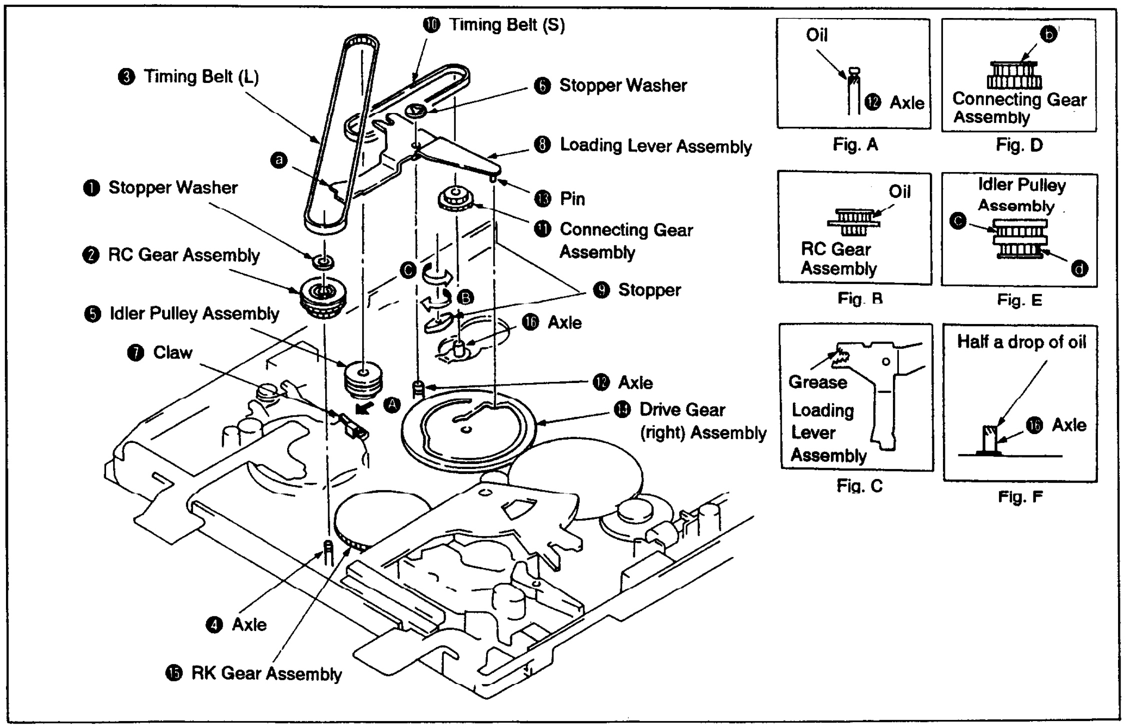

❿ Timing Belt (S)
❸ Timing Belt (L)
❻ Stopper Washer
❽ Loading Lever Assembly
ⓐ
❶ Stopper Washer
⓭ Pin
⓫ Connecting Gear Assembly
❷ RC Gear Assembly
🅒
🅑
❾ Stopper
❺ Idler Pulley Assembly
⓰ Axle
❼ Claw
⓬ Axle
🅐
⓮ Drive Gear (right) Assembly
❹ Axle
⓯ RK Gear Assembly
Oil
⓬ Axle
Fig. A
ⓑ
Connecting Gear Assembly
Fig. D
Oil
RC Gear Assembly
Fig. B
Idler Pulley Assembly
ⓒ
ⓓ
Fig. E
Grease
Loading Lever Assembly
Fig. C
Half a drop of oil
⓰ Axle
Fig. F

Fig. 3-16.

3-16. IDLER PULLEY, TS BRAKE ASSEMBLY, LB GEAR ASSEMBLY, RK GEAR ASSEMBLY

1. Removal (See Fig. 3-17.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly described in section 3-15.
4) Set the STOP mode.
5) Remove the stopper washer ❶, then remove the idler pulley ❷.
6) Open the claw ❸, then remove the TS brake assembly ❹.
7) Remove the torsion coil spring (LB) ❺.
8) Remove the stopper washer ❻, then remove the LB gear assembly ❼.
9) Remove the RK gear assembly ❽.

Note: When removing the idler pulley ❷, take care not to touch the flange section ⓐ. (See Fig. C.)

2. Installation (See Fig. 3-17.)

1) Apply half a drop of oil to the axle ❾ (See Fig. A).
2) Mount the RK gear assembly ❽ onto the axle ❾, keeping it in horizontal position.
3) Apply half a drop of oil to the axle ❿ (See Fig. B).
4) Mount the LB gear assembly ❼ onto the axle ❿ and secure it with the stopper washer ❻.
5) Insert the torsion coil spring (LB) ❺ into the axle ⓫, then hook it to the mechanism chassis notch ⓬ and to the tab ⓭.
6) Mount the TS brake assembly ❹ and close the claw ❸.
7) Apply half a drop of oil to the axle ⓰ (See Fig. D).
8) Mount the idler pulley ❷ onto the axle ⓰, then secure it with the stopper washer ❶.
9) Mount the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly as described in section 3-15.
10) Mount the switch lever assembly as described in section 3-14.
11) Mount the DC motor (capstan motor) as described in section 3-3.

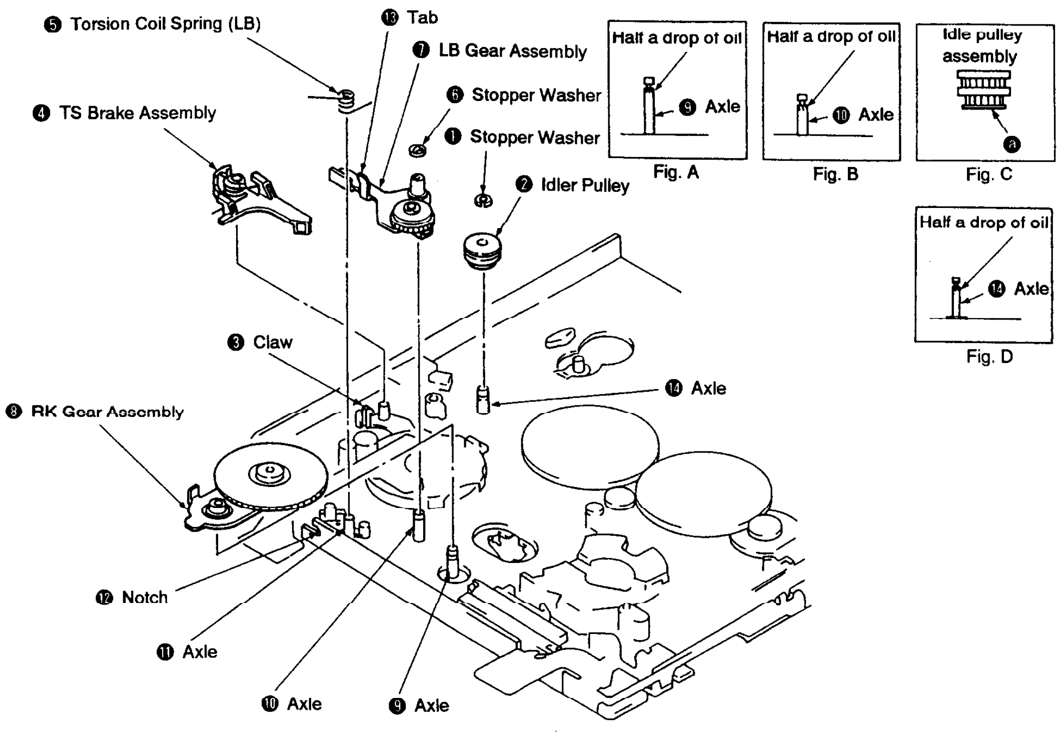

❺ Torsion Coil Spring (LB)
⓭ Tab
❼ LB Gear Assembly
❻ Stopper Washer
❹ TS Brake Assembly
❶ Stopper Washer
❷ Idler Pulley
Half a drop of oil
❾ Axle
Fig. A
Half a drop of oil
❿ Axle
Fig. B
Idle pulley assembly
ⓐ
Fig. C
Half a drop of oil
⓮ Axle
Fig. D
❸ Claw
⓮ Axle
❽ RK Gear Assembly
⓬ Notch
⓫ Axle
❿ Axle
❾ Axle

Fig. 3-17.

3-17. UL GEAR, UL BRAKE, UL ARM, LB PLATE SPRING

1. Removal (See Fig. 3-18.)

1) Remove the switch lever assembly as described in section 3-14.
2) Remove the stopper washer ❶, then remove the UL gear ❷.
3) Remove the UL arm ❸, the 1.6 mm-diameter poly washer ❹ and the LB plate spring ❺.
4) Remove the UL brake ❻.

2. Installation (See Fig. 3-18.)

1) Mount the UL brake ❻.
2) Apply half a drop of oil to the axle ❼ (See Fig. A).
3) Mount the LB plate spring ❺ to the axle ❼ as shown in Fig. B, then install the 1.6mm-diameter poly washer ❹.
4) Mount the UL arm ❸ to the axle ❼ so that the protrusion ❽ comes into the groove ❾ of the UL brake ❻.
5) Mount the UL gear ❷ to the axle ❼ and engage it with the gear of the drive gear (left) assembly ❿.
6) Install the stopper washer ❶.
7) Mount the switch lever assembly as described in section 3-14.

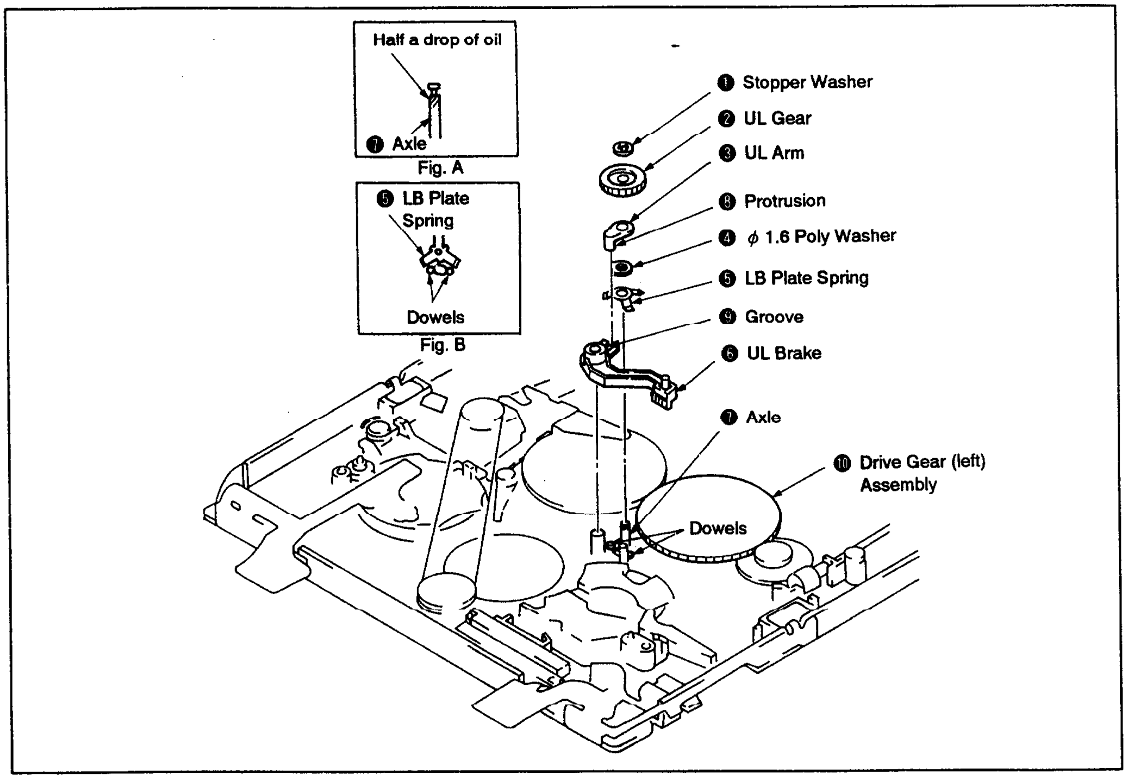

Half a drop of oil
❼ Axle
Fig. A
❺ LB Plate Spring
Dowels
Fig. B
❶ Stopper Washer
❷ UL Gear
❸ UL Arm
❽ Protrusion
❹ ϕ 1.6 Poly Washer
❺ LB Plate Spring
❾ Groove
❻ UL Brake
❼ Axle
❿ Drive Gear (left) Assembly
Dowels

Fig. 3-18.

3-18. COASTER (RIGHT) ASSEMBLY, DRIVE GEAR (RIGHT) ASSEMBLY

1. Removal (See Fig. 3-19.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum unit as described in section 3-13.
3) Remove the switch lever assembly as described in section 3-14.
4) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Set the STOP mode.
6) Remove the screw ❶, then remove the coaster plate spring ❷ and the coaster (right) assembly ❸.
7) Remove the two screws ❹, then remove the reinforcing plate TT ❺.
8) Remove the stopper washer 1.5 ❻, then remove the drive gear (right) assembly ❼.

2. Installation (See Fig. 3-19.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. F).
3) Grease pin ❾, axle ❿ and dowel ⓮ of the coaster (right) assembly ❸ (See Fig. D).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Move the brake release arm ⓬ in the direction of the arrow 🅐 to put it out of the way.
6) Mount the drive gear (right) assembly ❼ to the axle ❽, and engage it with the drive gear (left) assembly ⓭ as shown in Fig. B.
7) Align the ⓐ part with the ⓑ part, and the hole ⓮ with the pin ❾ of the coaster (right) assembly ❸.
8) Install the stopper washer 1.5 ❻.
9) Mount by aligning the coaster plate spring ❷ with the axle ❿ of the coaster (right) assembly ❸ and pin ❾, then secure with the screw ❶.
10) Mount the reinforcing plate TT ❺ aligning it with the dowel ⓯, then tighten the two screws ❹ in the indicated order.
11) Grease the points indicated in Figs. C and E.
12) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly as described in section 3-14.
14) Mount the drum unit as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

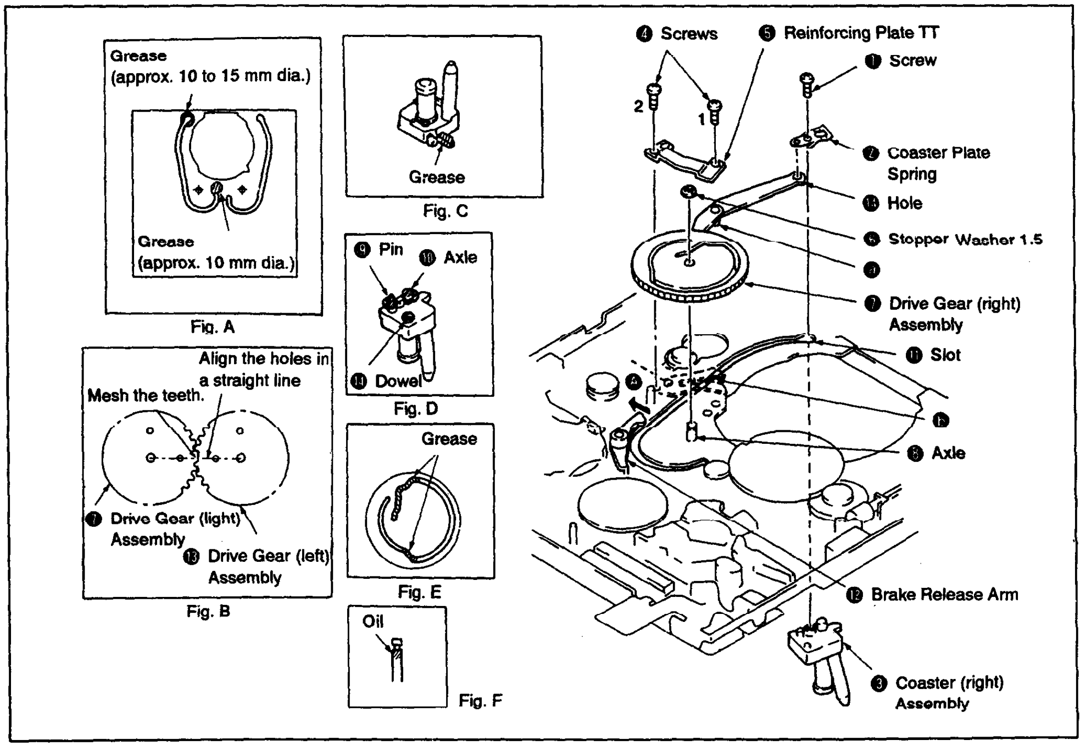

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
Fig. A
Grease
Fig. C
❾ Pin
❿ Axle
⓮ Dowel
Fig. D
Grease
Fig. E
Oil
Fig. F
Align the holes in a straight line
Mesh the teeth.
❼ Drive Gear (light) Assembly
⓭ Drive Gear (left) Assembly
Fig. B
❹ Screws
❺ Reinforcing Plate TT
❶ Screw
2
1
❷ Coaster Plate Spring
⓯ Hole
❻ Stopper Washer 1.5
ⓐ
❼ Drive Gear (right) Assembly
⓫ Slot
🅐
ⓑ
❽ Axle
⓬ Brake Release Arm
❸ Coaster (right) Assembly

Fig. 3-19.

3-19. COASTER (LEFT) ASSEMBLY, DRIVE GEAR (LEFT) ASSEMBLY

1. Removal (See Fig. 3-20.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum assembly as described in section 3-13.
3) Remove the switch lever assembly and the pinch roller sub-arm assembly as described in section 3-14.
4) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Remove the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
6) Remove the screw ❶, then remove the coaster plate spring ❷ and the coaster (left) assembly ❸.
7) Remove the two screws ❹, then remove the reinforcing plate SS assembly ❺.
8) Remove the stopper washer 1.5 ❻, then remove the drive gear (left) assembly ❼.

2. Installation (See Fig. 3-20.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. E).
3) Grease pin ❾, axle ❿ and dowel ⓰ of the coaster (left) assembly ❸ (See Fig. B).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Fit the drive gear (left) assembly ❼ to the axle ❽, and mount so that the gear engages with the wheel gear ⓭ and the UL gear ⓮.
6) Align the ⓐ part with the slot ⓫, and the hole ⓮ with the pin ❾ of the coaster (left) assembly ❸.
7) Install the stopper washer 1.5 ❻.
8) Mount by aligning the coaster plate spring ❷ with the axle ❿ and pin ❾ of the coaster (left) assembly ❸, then secure with the screw ❶.
9) Mount the reinforcing plate SS assembly ❺ aligning it with the dowel ⓯, then tighten the two screws ❹ in the indicated order.
10) Grease points indicated in Figs. C and D.
11) Mount the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
12) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
14) Mount the drum assembly as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

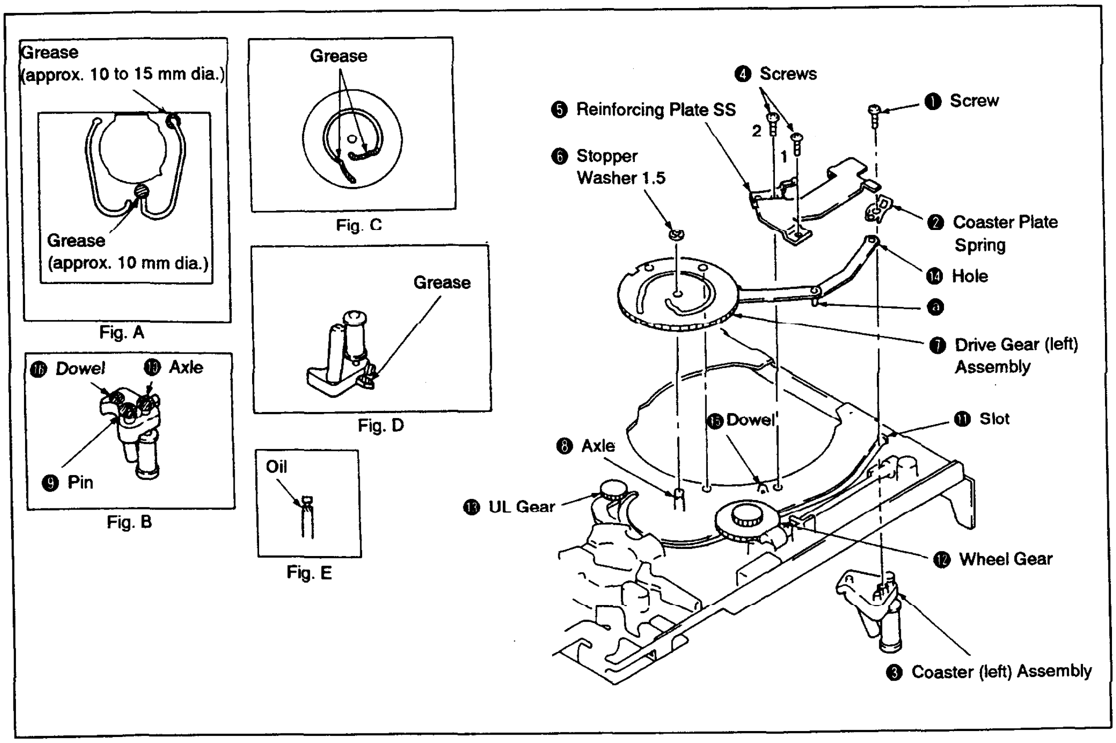

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
⓰ Dowel
⓾ Axle
❾ Pin
Grease
Grease
Oil
❹ Screws
❺ Reinforcing Plate SS
2
1
❶ Screw
❻ Stopper
Washer 1.5
❷ Coaster Plate
Spring
⓮ Hole
ⓐ
❼ Drive Gear (left)
Assembly
⓫ Slot
⓯ Dowel
❽ Axle
⓭ UL Gear
⓬ Wheel Gear
❸ Coaster (left) Assembly

Fig. A

Fig. B

Fig. C

Fig. D

Fig. E

Fig. 3-20.

3-20. LOADING MOTOR, BRAKE RELEASE ARM, WHEEL GEAR, WORM ASSEMBLY

1. Removal (See Fig. 3-21.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
4) Remove the drive gear (right) assembly as described in section 3-18.
5) Remove the drive gear (left) assembly as described in section 3-19.
6) Remove the two screws ❶, then remove the loading motor assembly ❷.
7) Remove the brake release arm ❸.
8) Remove the stopper washer ❹, then remove the wheel gear ❺.
9) Remove the worm assembly ❻ from the six claws ❼.

2. Installation (See Fig. 3-21.)

1) Mount the worm assembly ❻, matching it to the six claws ❼.
2) Grease the shaded parts of the worm assembly ❻ (five places) (see Fig A).
3) Apply half a drop of oil to the axle ❽ (See Fig. B).
4) Fit the wheel gear ❺ to the axle ❽ and engage it with the gear of the worm assembly ❻.
5) Mount the brake release arm ❸.
6) Grease the whole perimeter of the gear of the loading motor assembly ❷.
7) Align the loading motor assembly ❷ with the mechanism chassis and secure it with the two screws ❷.
8) Mount the drive gear (left) assembly as described in section 3-19.
9) Mount the drive gear (right) assembly as described in section 3-18.
10) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
11) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
12) Mount the DC motor (capstan motor) as described in section 3-3.

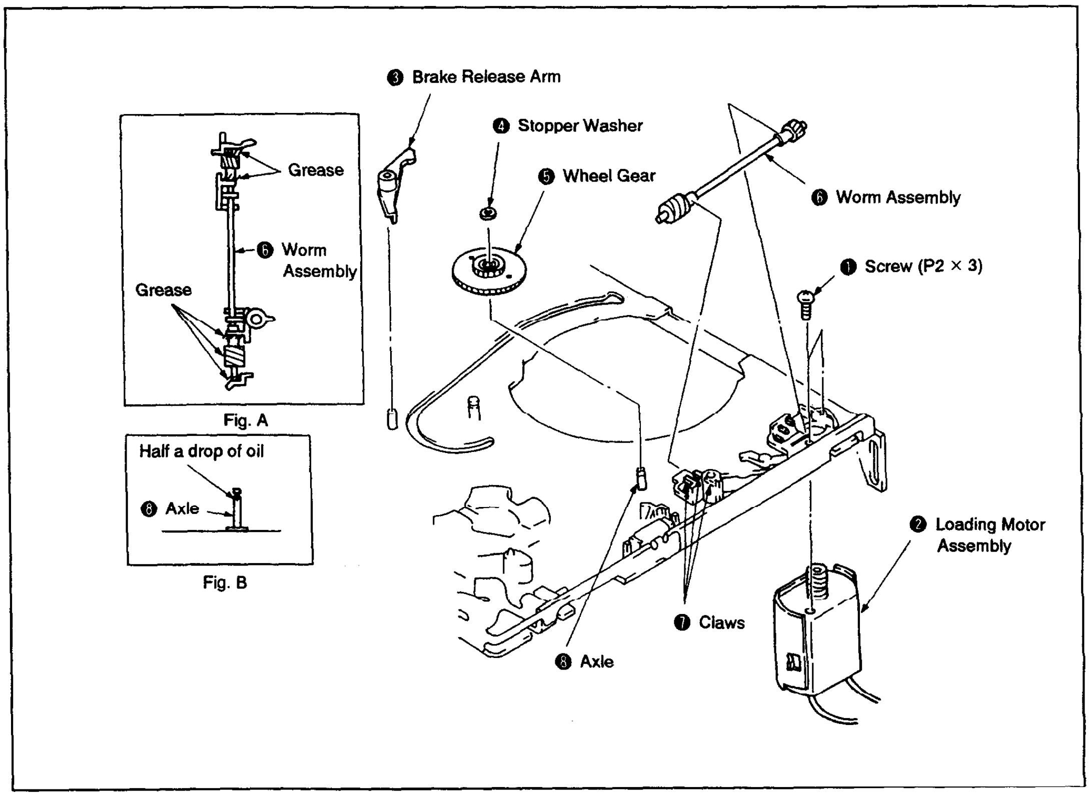


Fig. A

Fig. B

Fig. 3-21.

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removal

- If possible, make a recording before removal.

1) Detach the six solderings ⓐ, then use a pair of tweezers or the like to confirm that the terminals passing through the board holes from below can move freely.
2) Remove the two screws ❶ (See Fig. 3-22).
3) Mount the jig ❹ (Ref. No. J-7) with the two supplied screws ❷, then screw the attached hexagon socket screws ❸ to the jig ❹. The rotary upper drum ❺ will move upward and come off (See Fig. 3-23).

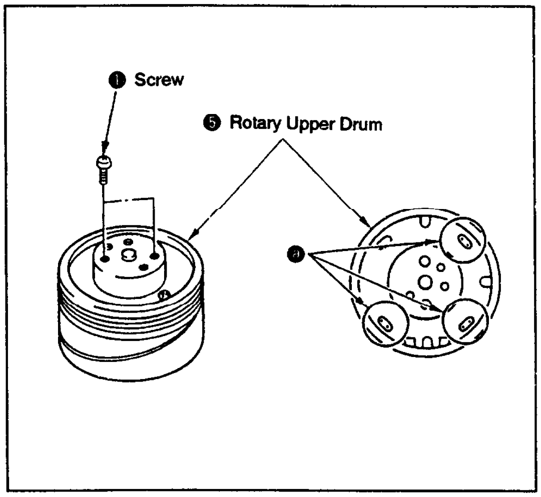


Fig. 3-22.

2. Installation

1) Wipe clean the flange surface and the rotary upper drum ❺ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ❼ (Ref. No. J-7) into the drum positioning hole, then set the rotary upper drum ❺ by passing the jig through its positioning hole ❻.
   Note: Confirm that the terminals ❽ protrude slightly from the rotary upper drum board holes (See Fig. 3-24).
3) Remove the jig ❼ and push down the rotary upper drum ❺ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two hexagon socket screws ❶ alternately.
4) Insert the jig ❼ into the positioning hole ❻ again and confirm that it goes in smoothly. If it does not, loosen the two screws ❶, repeat step 3 of the Removal paragraph and restart the setting procedure.
5) Tighten the screws ❶.
6) Solder the terminals ❽ (ⓐ in Fig. 3-22).
   Note: Take care that no solder flows below the board.

Note: After installing, be sure to perform tape path adjustment as described in section 4.

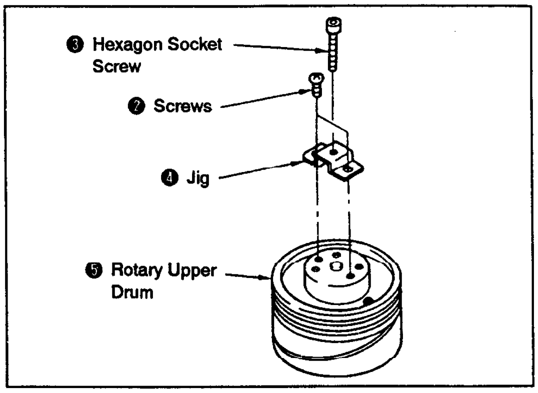


Fig. 3-23.

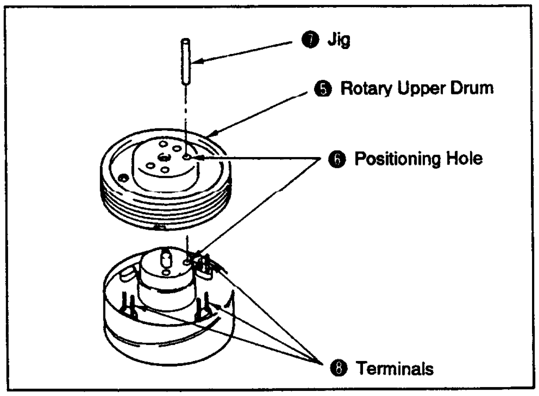


Fig. 3-24.

3-22. FWD BACK TENSION (See Fig. 3-25.)

1) Set the torque cassette (Ref. No. J-6).
2) Set the FWD mode and confirm that S reel table torque value is within 9 to 13 g•cm.
3) If the torque value does not meet the specification, adjust the adjust arm ❶.

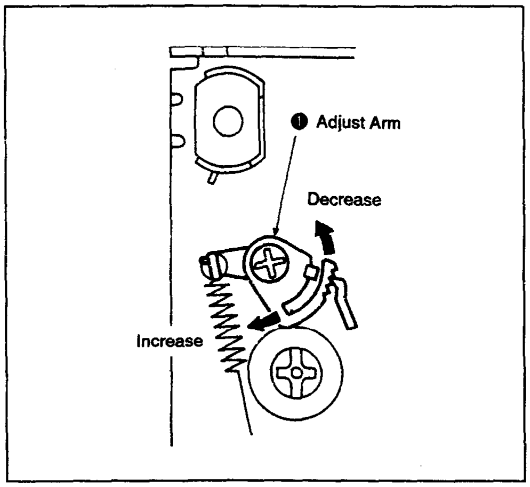


Fig. 3-25.

3-23. REEL TORQUE CHECK

1) Set the torque cassette.
2) Set the FWD mode and confirm that T reel table torque value is within 7 to 15 g•cm.
3) Set the REV mode and confirm that S reel table torque value is within 29 ± 6 g•cm.
4) Set the REV mode and confirm that T reel table torque value is within 13 to 25 g•cm.
5) If a torque value does not meet the specifications above, replace the corresponding reel table.

4. TAPE PATH ADJUSTMENT

[The Track Shift Mode]

In the 8 mm video system, instantaneous tape speed control is performed using four kinds of pilot signals, and high-precision tracking is achieved through the ATF (Automatic Track Finding) system. This makes a tracking control knob unnecessary and allows for precise tracing.

On the other hand, however, tape path adjustment presents some difficulties when the ATF system is used. Namely, since the ATF system will automatically compensate to some degree for head tracing errors, thorough adjustment is not possible.

This can be solved by setting the track shift mode for tracking fine adjustment. ATF will be compulsorily activated, shifting the tracking amount by a fixed amount (approx. 1/4) and thus making tracking fine adjustment easy. Furthermore, no track shift jigs are required.

4-1. TRACK SHIFT MODE SETTING

[Setting Procedure]

- Connect the TEST A and TEST B terminals to the COM terminal.
  Example:
  NTSC ········ GV-8
  PAL ·········· GV-8E
  Connect Pins ① and pin ③ of CN017 on the { SV-34 board (GV-8) / SV-35 board (GV-8E) } to pin ② of it. (See Fig. 4-1)

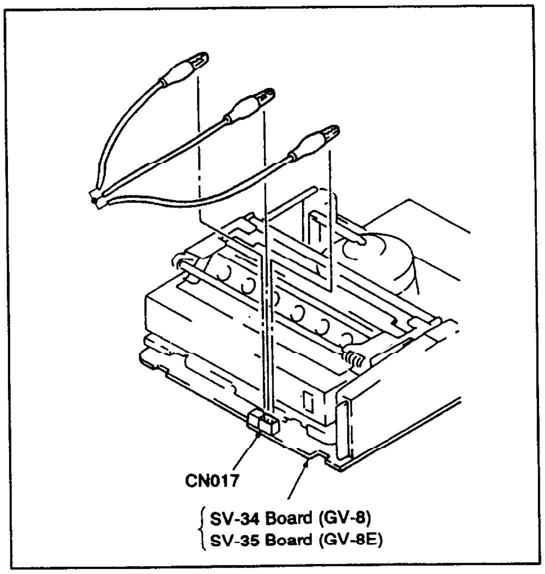
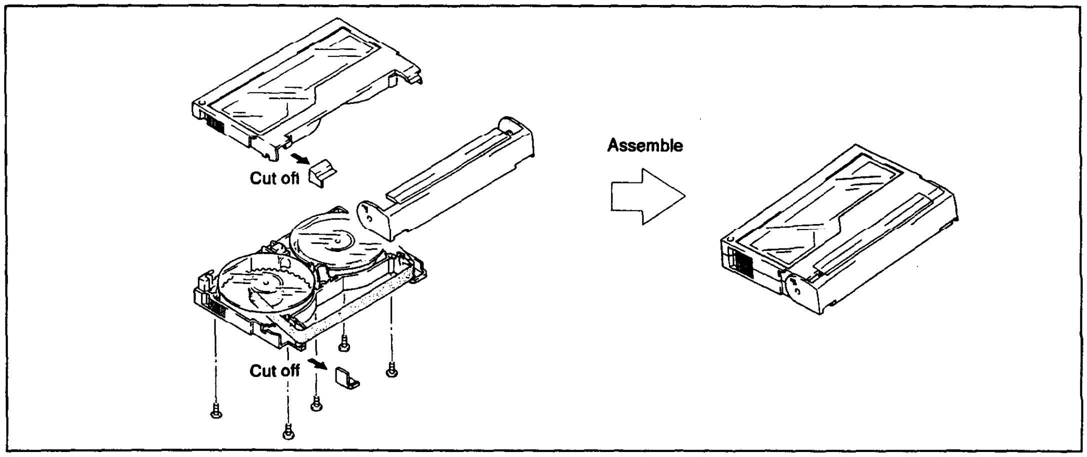


Fig. 4-1.

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig. 4-2).
Therefore, when performing section 4-6. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-5), modified as follows, and perform adjustment in playback mode.


Cut off
Assemble
Cut off

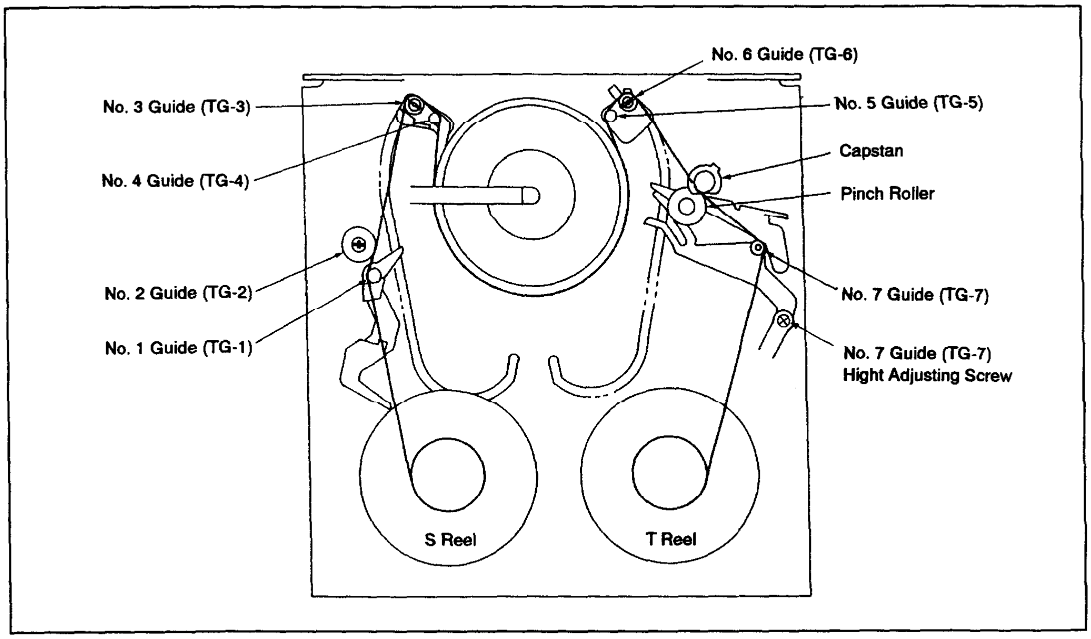

No. 6 Guide (TG-6)
No. 3 Guide (TG-3)
No. 5 Guide (TG-5)
Capstan
No. 4 Guide (TG-4)
Pinch Roller
No. 2 Guide (TG-2)
No. 7 Guide (TG-7)
No. 1 Guide (TG-1)
No. 7 Guide (TG-7)
Hight Adjusting Screw
S Reel
T Reel

Fig. 4-2.

4-2. PREPARATIONS FOR ADJUSTMENT

1) Clean tape path surfaces (tape guides, drum, capstan shaft, pinch roller) (See Fig. 4-2).
2) Connection of oscilloscope and output method of waveform.
   CH 1: RF signal output of the drum head (V RF OUT)
   Method for signal output:
   Short-circuit the external trigger output (RF SW. P) and GND.

   Example:
   NTSC ····· GV-8
   PAL ······· GV-8E
   CH 1: Pin ③ (V RF OUT) of CN018 on the
   SV-34 board (GV-8)
   SV-35 board (GV-8E)
   Method for signal output:
   Short-circuit pin ① (GND) and pin ② (RF SW.P) of CN018 on the
   SV-34 board (GV-8)
   SV-35 board (GV-8E)
3) Play back the alignment tape for tracking adjustment (Ref. No. J-5).
4) Confirm that both the entrance and exit side RF waveforms of the oscilloscope are flat (See Fig. 4-4). If they are not, adjust as follows.

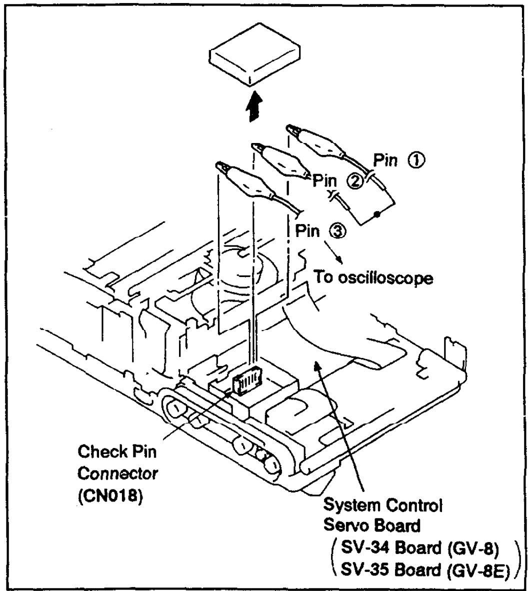

Pin ①
Pin ②
Pin ③
To oscilloscope
Check Pin Connector (CN018)
System Control Servo Board
SV-34 Board (GV-8)
SV-35 Board (GV-8E)

Fig. 4-3.

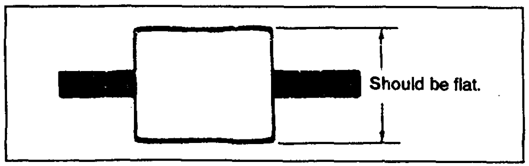

Should be flat.

Fig. 4-4.

4-3. TRACKING ADJUSTMENT (See Fig. 4-5.)

1) Play back the alignment tape for tracking adjustment.
2) Pass a hexagonal wrench, screwdriver (Ref. No. J-11) or the like through the hole ❶, loosen the lockscrew ❷ a little, then make the entrance side waveform flat by turning the No. 3 guide (TG-3) ❸.
3) Pass a hexagonal wrench, screwdriver or the like through the hole ❹, loosen the lockscrew ❺ a little, then make the exit side waveform flat by turning the No. 6 guide (TG-6) ❻.

Note: Take care not to loosen lockscrews too much, since guides come loose easily.

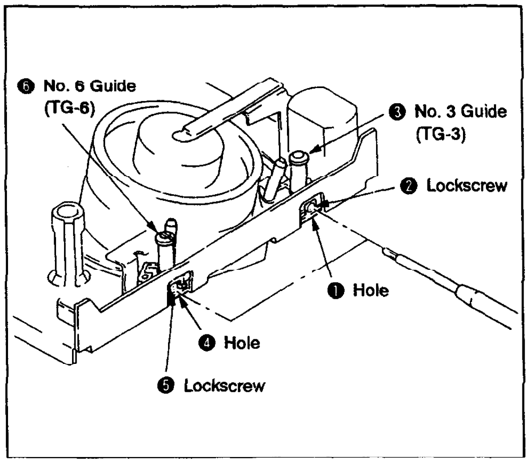

❻ No. 6 Guide (TG-6)
❸ No. 3 Guide (TG-3)
❷ Lockscrew
❶ Hole
❹ Hole
❺ Lockscrew

Fig. 4-5.

4-4. TRACKING FINE ADJUSTMENT (See Figs. 4-5. and 4-6.)

1) Play back the alignment tape for tracking adjustment and set the track shift mode.
2) Confirm whether the waveform is flat. If it is not, turn the No. 3 (TG-3) and No. 6 (TG-6) guides so that it becomes flat.
3) Fix the No. 3 guide ❸ by tightening its lockscrew ❷. Then confirm that the entrance side waveform has not changed.
4) Fix the No. 6 guide ❻ by tightening its lockscrew ❺. Then confirm that the exit side waveform has not changed.

Note: The set screws ❷ and ❺ should be tightened with a tightening torgue of approx. 200g•cm ± 10%.
If tightened too much, there is danger of damaging the thread.

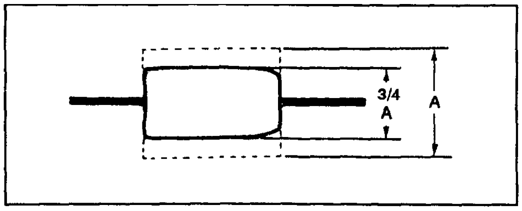


Fig. 4-6.

4-5. No. 2 GUIDE (TG-2) ADJUSTMENT

When the No. 2 guide has been turned or replaced, perform height presetting before this adjustment.

4-5-1. No. 2 Guide (TG-2) Height Presetting (See Fig. 4-7.)

1) Adjust the height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by rotating the TG-2 upper flange ❶.

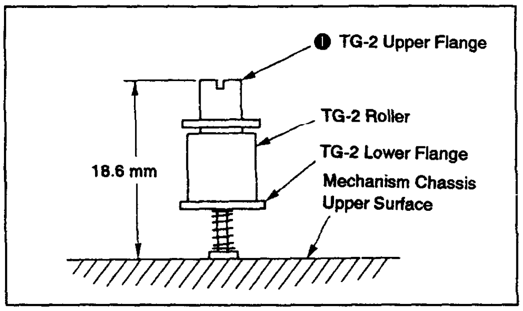


Fig. 4-7.

[Reference]

This U mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Counterclockwise
	Lower	Clockwise

4-5-2. No. 2 Guide (TG-2) Adjustment
(See Figs. 4-8. and 4-9.)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No. 2 guide (TG-2) ❶ (See Fig. 4-8). If it is, turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and tracking fine adjustment as described in sections 4-3. and 4-4.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (See Fig. 4-9), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counter-clockwise and repeat step 5.

   Repeat steps 5 and 6 until a normal waveform is obtained. Then, confirm that the tracking waveform has not changed. If it has, perform fine adjustment of entrance side tracking and repeat step 5.

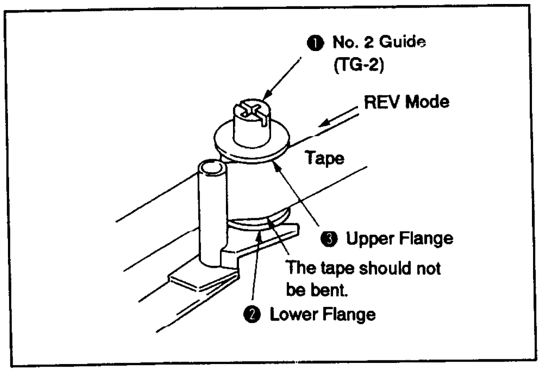

❶ No. 2 Guide (TG-2)
REV Mode
Tape
❸ Upper Flange
The tape should not be bent.
❷ Lower Flange

Fig. 4-8.

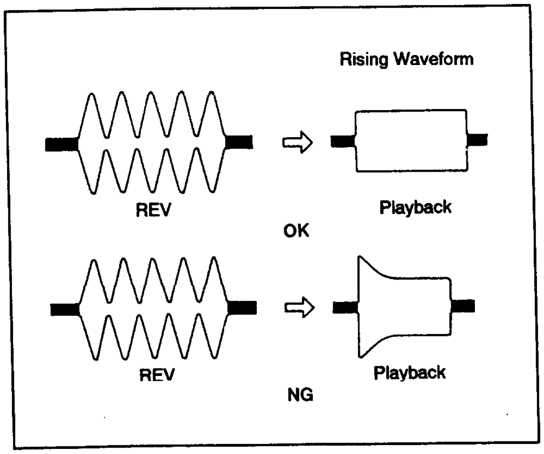

Rising Waveform
REV
OK
Playback
REV
NG
Playback

Fig. 4-9.

4-6. No. 7 GUIDE (TG-7) ADJUSTMENT
(See Fig. 4-10.)

1) Play back the alignment tape for tracking adjustment and set the REV mode.
2) Confirm that the tape is not bent between the No. 6 guide (TG-6) ❶ and the capstan ❷ . If it is, turn the hight adjusting screw ❹ of the No. 7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No. 7 guide (specification:0.5 mm or less) . If the tape is bent beyond the specification, turn the No. 7 guide (TG-7) ❸ until bending is within the specification (0.5 mm).

   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3 mm or less, adjustment can be considered completed.

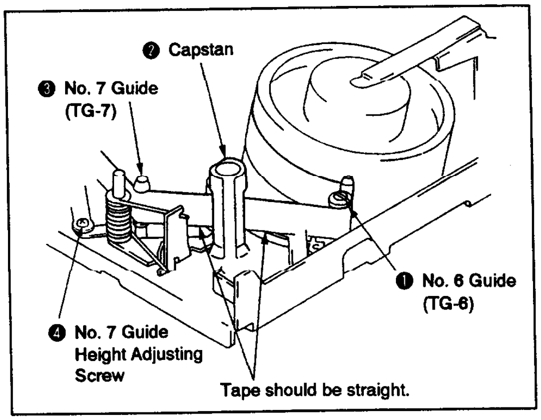

❷ Capstan
❸ No. 7 Guide (TG-7)
❶ No. 6 Guide (TG-6)
❹ No. 7 Guide Height Adjusting Screw
Tape should be straight.

Fig. 4-10.

4-7. CUE AND REV WAVEFORM CHECK (See Fig. 4-11.)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (See Fig. 4-11). In case pitch is not constant, perform section 4-4. Tracking Fine Adjustment and section 4-6. No. 7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (See Fig. 4-11). Otherwise, perform section 4-4. Tracking Fine Adjustment.

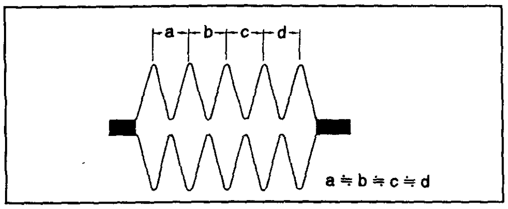


Fig. 4-11.

4-8. CHECK AFTER ADJUSTMENT

4-8-1. Tracking Check

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (See Fig. 4-12).
2) Then, confirm that the minimum amplitude value (EMIN) is 65% of the maximum value (EMAX) or larger (See Fig. 4-13).
3) Confirm that no large fluctuations occur on the waveform (See Fig. 4-14).

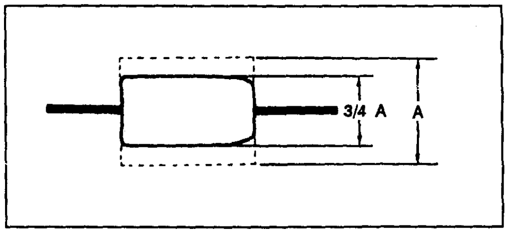


Fig. 4-12.

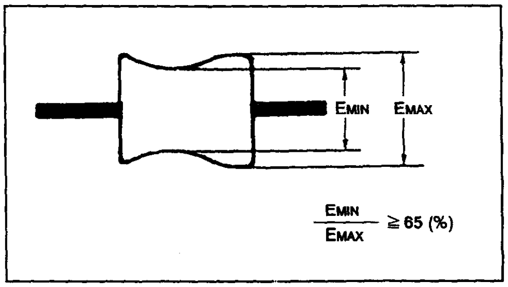


Fig. 4-13.

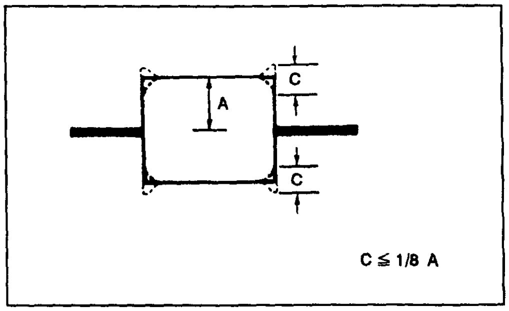
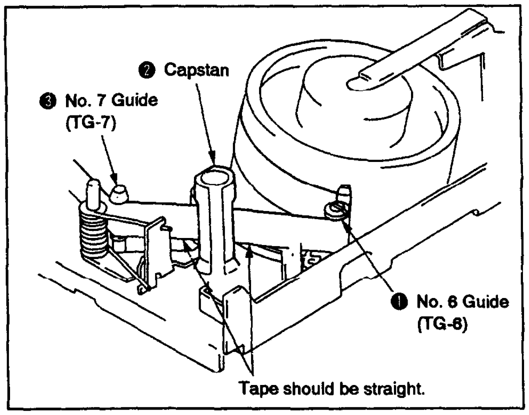


Fig. 4-14.

4-8-2. Rising Check (See Fig. 4-15.)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller (See Fig. 4-15).
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

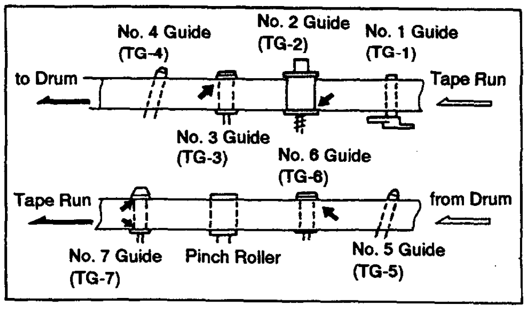


❷ Capstan
❸ No. 7 Guide (TG-7)
❶ No. 6 Guide (TG-6)
Tape should be straight.

Fig. 4-15.

4-8-3. Tape Path Check (See Fig. 4-16.)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3 mm, at the lower flange of the No. 2 guide, the upper flange of the No. 3 guide, the upper flange of the No. 6 guide and the No. 7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3 mm at the flanges of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.



No. 4 Guide (TG-4)
No. 2 Guide (TG-2)
No. 1 Guide (TG-1)
to Drum
Tape Run
No. 3 Guide (TG-3)
No. 6 Guide (TG-6)
Tape Run
from Drum
No. 7 Guide (TG-7)
Pinch Roller
No. 5 Guide (TG-5)

Fig. 4-16.